

THE

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## DISEASES CAUSED BY BACTERIA AND FUNGI

Torheim, B. J. (1960). A method for the phage typing of staphylococci.—*Acta path. microbiol. scand.* 49, 397-400. [In English.] 3779

T. described an apparatus for phage typing of staphylococci, by means of which the drops of the various phage filtrates can be applied simultaneously to the agar surface.

—F.E.W.

Malik, B. S. & Singh, C. M. (1960). Studies on staphylococci with particular reference to strains from bovine udder. VIII. Serological typing and its comparison with phage typing.—*J. infect. Dis.* 106, 256-261. 3780

The authors examined, by Oeding's serological technique [*Acta path. microbiol. scand.* 41, 310 (1957)], 44 strains of coagulase-positive staphylococci obtained from cows' milk and compared the results with phage typing [the phages used are not listed]. 31 of the strains could be typed serologically and were divided into 4 main groups within each of which was a number of sub-groups. 13 phage patterns were recognized but there was no definite correlation between these and the serological groups.—IAN DAVIDSON.

Moore, B. (1960). A new screen test and selective medium for the rapid detection of epidemic strains of *Staph. aureus*.—*Lancet*, August 27th, 453-458. [Author's summary modified.] 3781

Staphylococci of phage-types known to be associated with epidemic hospital infection were more resistant to mercuric salts than non-epidemic strains.

A series of 505 staphylococcal strains received for phage-typing from various laboratories were divided into mercury-resistant and mercury-sensitive groups on the basis of growth or absence of growth on peptone agar containing 1 in 27,500 mercuric chloride.

Anon. (1960). Drug-resistant staphylococci in the farmyard.—*Lancet*, June 18th, 1338-1339. 3782

A commentary on the article by Smith & Crabb [*V.B.* 30, 2770].—R.M.

Jay, J. M. (1960). Studies on the development of chlortetracycline-resistant staphylococci in chlortetracycline-treated beef.—*Antibiot. & Chemother.* 10, 440-444. [Summary in Spanish. pp. 459-460. Author's summary modified.] 3783

Two strains of *Staphylococcus aureus* were incubated for 4 days at a time with beef containing low concentrations of chlortetracycline. Resistance of the strains increased after three exposures, and to a great degree after six exposures. The degree of resistance attained after one and two exposures appeared to be insignificant. This apparent resistance was lost when the organisms were transferred at least three times in the absence of the antibiotic in nutrient media. Staphylococci isolated from beef treated with 0·25 p.p.m. chlortetracycline were more resistant than those isolated from beef treated with 0·5 p.p.m. Attempts to demonstrate the same kind of resistance in strains grown in tryptose phosphate broth and cooked meat medium using the constant concentration of 0·25 p.p.m. chlortetracycline have so far failed.

Rolinson, G. N., Stevens, S., Batchelor, F. R., Wood, J. C. & Chain, E. B. (1960). Bacteriological studies on a new penicillin—BRL.1241.—*Lancet*, Sept. 10th, 564-567. 3784

BRL. 1241 is a new penicillin prepared from 6-amino-penicillanic acid. Unlike penicillin G and V, this penicillin is stable to staphylococcal penicillinase and is active against the penicillinase-producing penicillin-resistant staphylococci.—R.M.

Hyldgaard-Jensen, C. (1960). Furacinch behandling af akut mastitis hos kvaeg. [Nitrofurazone treatment of acute mastitis in cows.] — Medlemsbl. danske Dyrlegeforeningen. 43, 452-455. [In Danish.] 3785

In a clinical trial in 167 cases of acute mastitis (caused by a variety of bacteria), using a 0·2% solution of nitrofurazone in a mixture of polyglycols and water, 25-30 ml. was injected into each affected quarter after thorough milking. Before and 4-8 weeks after treatment milk samples were examined. The results compare favourably with those obtained in 321 similar cases treated with other mastitis preparations in current use (these are shown in two tables).—F.E.W.

Spencer, G. R. & Simon, J. (1960). The catalase, California, and cell count tests for detecting abnormalities in milk. — Amer. J. vet. Res. 21, 578-584. 3786

The authors compared the three tests on samples from 138 herds and recommended the catalase test for use on herd samples. It was inferior to the California test for samples from individual quarters of the udder.—R.M.

Nesvadba, J., Gilka, F. & Salajka, E. (1960). Infekční streptokokková meningitis selat. [Infectious streptococcal meningitis in piglets.] — Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 5, 549-554. [In Czech. Summaries in English and Russian.] 3787

The clin. picture, P.M. appearance and histopathology of spontaneous meningitis caused by  $\alpha$ -haemolytic streptococci in 30 piglets aged 16-23 days from 4 litters were described. The isolated strains were very sensitive to penicillin, neomycin and erythromycin, less so to streptomycin, chloramphenicol and oleandomycin, even less to tetracycline and chlortetracycline; they were resistant to bacitracin and oxytetracycline. Pigs responded to penicillin therapy.—E.G.

I. Zarubkinskii, V. S. (1958-59). [Self purification of soil and water from anthrax bacilli.] —Sborn. nauch. Trud. L'vov. zootekh. -vet. Inst. 9, 51-58. [In Russian.] 3788  
II. Vasil'eva, V. M. (1958-59). [Soil bacteria as antagonists of anthrax bacilli. II.] —Ibid. 149-153. [In Russian.] 3789

III. Tolstova, A. G. (1958-59). [Antagonism of microflora in the gastro-intestinal tract of laboratory animals to *Bacillus anthracis*.] —Ibid. 155-160. [In Russian.] 3790

I. Z. reviewed the work done at L'vov zootechnical-veterinary institute which showed

that anthrax bacilli did not multiply in 8 types of unsterilized soil nor in 3 sources of water. The principal inhibitory agents were bacteria normally present in soil and water.

II. Nineteen species of soil bacteria inhibited the growth of anthrax bacilli (they are listed on p. 152). This inhibition was not due to bacteriophages or water-soluble antibiotics.

III. The microflora of different parts of the gut of g.pigs and rabbits was counted. The micro-organisms were classified into 50 species in g.pigs and 32 species in rabbits. Of these, *E. coli*, *B. subtilis*, *B. mesentericus* and some others were antagonistic to the growth of anthrax bacilli in cultures.—R.M.

Cheglokova, G. V. (1960). [Antibiotic treatment of experimental anthrax in farm animals.] — Veterinariya, Moscow No. 7 pp. 43-44. [In Russian.] 3791

Anthrax bacilli were injected into four goats aged 2½ months. Anthrax did not develop in three given immediate treatment with penicillin and/or streptomycin, but the fourth untreated goat died from anthrax. Treatment of experimental anthrax with streptomycin and/or tetracycline beginning on the appearance of symptoms was successful in two yearling horses, three 3-month-old lambs and two adult sheep.—M.G.G.

Vardaman, T. H. (1960). A comparison of a haemagglutination test with a modified hemolytic test on serums from intradermal bovine tuberculin reactors and nontuberculous cattle. —Amer. J. vet. Res. 21, 574-577. 3792

In 1950 Middlebrook described a haemolytic modification of the haemagglutination test [*V.B.* 21, 3457]. Since then it has been found more reliable than the plain haemagglutination test for detecting TB. in human beings. Vardaman compared the two tests on sera from 1,410 cattle which had reacted to the tuberculin test and 232 uninfected cattle. The results showed that neither test was as reliable as the i/d tuberculin test, since only 55% of tuberculin reactors with lesions had titres of 1 : 16 or above in the haemolytic test, and only 36% gave positive haemagglutination tests.

—R.M.  
Entessar, F. & Ardalani, A. (1960). La tuberculose bovine en Iran. Détermination des types de bacilles tuberculeux isolés de 136 produits pathologiques provenant de l'abattoir de Téhéran. [Bovine tuberculosis in Iran. Typing of *Mycobacterium tuberculosis* from

**slaughter cattle.]**—Bull. Off. int. Epiz. 53, 293-297. [Summaries in English and Spanish.] 3793

All 14 strains of tubercle bacillus from cattle in Teheran were of the bovine type, according to cultural morphology and P.M. lesions in g.pigs and rabbits.—M.G.G.

Stöss, B. (1960). Papierchromatographische Darstellung von Antigen-Antikörper-Reaktionen. II. Mitteilung: Mikropräzipitationen mit Lipidhaptenen aus Mycobakterien und Organen. [Paper chromatographic demonstration of antigen-antibody reactions. II. Microprecipitation of lipid haptens from mycobacteria and organs.] — Zbl. Bakt. I. (Orig.) 179, 72-85. [Summaries in English, French, Spanish and Russian.] 3794

The technique of demonstrating lipid haptens was discussed with special reference to the choice of solvent. The haptens of human and bovine strains of tubercle bacillus, as well as *M. phlei* were demonstrated. There were organ-specific lipid haptens in the brain of cattle, monkeys, human beings and g.pigs.

—R.M.

Novikova, M. P. (1959). [New liquid media for culturing *Mycobacterium johnei*.] — Sborn. Rabot Sibirsk. nauchno-issled. vet. Inst. 8, 147-151. [In Russian.] 3795

Fifteen media were tested for primary isolation and continuous cultivation of *M. johnei*. Four of the author's own media gave good results and the best was "medium No. 16". This was made from 400 ml. potato water and 500 ml. of *M. phlei* extract. The pH was adjusted to 7.1-7.2 and the solution was boiled for 5 min. and filtered. Then 100 ml. sterile pure glycerin was added.—R.M.

Zhabin, V. I. (1958). [Lesions of the nervous system in cattle with Johne's disease.] — Trudy Saratov. zootekh. -vet. Inst. 7, 119-125. [In Russian.] 3796

Sections of several parts of the brain, spinal cord, several peripheral plexuses and ileum (for intramural plexuses) from 37 cattle were stained by haematoxylin-eosin, Ziehl-Neelsen, or by silver impregnation. There is no indication of the age and clinical state of the animals, or the stage at which they were killed, neither is there mention of confirmation of *M. johnei* infection. In "several cases" (not specified) degenerative changes consisting of swelling, vacuolation, plasmolysis and neuronophagia were found in the cerebral cortex, cerebellum, hippocampus, nucleus

caudatus, corpora quadrigemina and medulla oblongata; also in autonomic ganglia. Vascular lesions consisted of proliferation of endothelial and adventitial cells which in some cases gave rise to perivascular cuffing. In the white matter of the cerebral cortex and the hippocampus there were small foci of proliferating glia cells. Changes in the intramural plexus of the ileum were less pronounced than in other ganglia, such as the posterior cervical. Changes in the ganglia were more pronounced in animals that reacted positively to tuberculin than in those that gave doubtful reactions. Vascular lesions in the hippocampus were seen in some positive reactors but in none of the doubtful reactors [numbers not stated].

—R.M.

Goerttler, V. & Hubrig, T. (1960). Untersuchungen zur Rotlaufpathogenese beim Schwein. [Pathogenesis of swine erysipelas.] — Zbl. VetMed. 7, 364-391. [Summaries in English, French and Spanish.] 3797

Pigs which carried erysipelas bacilli in their tonsils did not develop the disease when placed in a hot room (25-27°C.) for 4 days. Feeding bacilli of Types A and B to non-immune susceptible pigs immunized them but did not cause illness. Feeding weakly virulent strains of Type A together with heat stress provoked erysipelas, but feeding Types B and N did not. The best test for existing immunity in experimental pigs was the inhibition of growth of cultures by serum. It was concluded that the main factors concerned in swine erysipelas were the immune state of the pig and the virulence of the organism.—R.M.

I. Wellmann, G. & Heuner, F. (1959). Beziehungen zwischen serologisch nachweisbaren Antikörpern und der Immunität beim Schweinerotlauf. [Relationship between circulating antibodies and immunity in swine erysipelas.] — Zbl. Bakt. I. (Orig.) 175, 373-387. [Summaries in English, French, Spanish and Russian.] 3798

II. Wellmann, G. & Liebke, H. (1960). Über das Vermögen junger Ferkel, eine Rotlaufimmunität zu bilden. [Capacity of young piglets to develop immunity to swine erysipelas.] — Ibid. 177, 394-402. [Summaries in English, French, Spanish and Russian.] 3799

I. Three tests were used to detect antibodies in serum: inhibition of the growth of cultures, haemagglutination-inhibition, and tube agglutination. Their reliability was compared and it was found that the growth-inhibition test provided the most accurate

information about immunity. Factors influencing immunity and production of agglutinins were discussed.

II. 48 piglets were reared on the sow or artificially and at 2-4 days of age were inoculated with erysipelas bacilli by scarification. Others were inoculated with adsorbed vaccine at 2-4 or 7-9 days of age. Antibodies formed during the second week of life in piglets which had not received colostrum. In pigs reared on the sow, as well as in pigs artificially reared and inoculated with normal pig serum, antibodies were not detected until 3-4 weeks of age; these pigs were better able to resist cutaneous challenge at between 20 and 90 days of age than those that developed antibodies at 1-2 weeks of age.—R.M.

Panina, G. & Dal Prato, A. (1959). Rapidità dell'insorgenza dell'immunità e suo rapporto con la quantità di antigene, in topi inoculati con vaccino antimalrosso adsorbito secondo Traub. [Relationship between quantity of antigen and development of immunity in mice inoculated with adsorbed swine erysipelas vaccine.]—Atti Soc. ital. Sci. vet. 13, 688-692. [Summaries in English and German.] 3800

The rate of development of immunity in mice was in direct proportion to the quantity of antigen inoculated. The efficacy test, based on the determination of the dilution which will protect half the animals, can be done 8-10 days after vaccination.—T.E.G.R.

Osebold, J. W., Kendrick, J. W. & Njoku-Obi, A. (1960). I. Cattle abortion associated with natural *Listeria monocytogenes* infections. II. Abortion in cattle experimentally with *Listeria monocytogenes*. — J. Amer. vet. med. Ass. 137, 221-226 & 227-233. 3801

I. Abortion accompanied by febrile illness, retention of placenta, and stillbirth or death of calves occurred in 3 herds. *E. monocytogenes* was isolated from uterine exudate or foetuses in each herd; in 6 of 10 cases the organism was demonstrated in secondary and not in the primary cultures. All isolates belonged to serological group 4b. Sera from 55 cows were tested by the somatic agglutination test of Osebold & Sawyer (1955) or by an "antigen-fixation" test, and positive results were obtained in most cases.

II. Cultures isolated from each of the 3 infected herds were inj. i/v into 3 heifers 6-8 months pregnant, in doses of 30-38 million organisms. The heifers aborted 6-8 days later and had retained placenta, fever, neutropenia

and loss of weight. The organism was isolated from uterine discharge 9 and 13 days after abortion, and from mammary secretion; also from the organs of 2 animals killed 25 and 36 days after infection. No gross lesions were seen in the foetuses, but there were necrotic foci in liver and spleen; there were no brain lesions.—R.M.

I. Kolomakin, G. A. (1960). [Pasteurellosis in foals.]—Veterinariya, Moscow No. 7 pp. 46-47. [In Russian.] 3802

II. Dan'shev, I. A. (1960). [Pasteurellosis in horses.]—Ibid. pp. 47-48. [In Russian.] 3803

I. After an outbreak of acute pasteurellosis in cattle on mountain pasture in summer, foals on the pasture developed fever and hot, painful, oedematous swellings of head, neck, shoulders and sternum, and many died. Virulent strains of pasteurella were recovered from the dead foals. K. did not think that the foals had previously been weakened by unfavourable conditions, primary infection or any other factor.

II. Three outbreaks of pasteurellosis in horses between March and August were reported. In one outbreak pigs also were affected, field mice were found dead, and *Dermacentor* ticks on the horses yielded virulent pasteurella. The other 2 outbreaks affected horses alone, 60% of them young animals. Contributory factors to the outbreaks were crowded, damp and dirty stables, recent strangles, and cold, rainy weather. The disease was acute, lasting 5-9 days, during which 2-6% of the horses died. Gastroenteritis, pleuropneumonia and oedema were observed. Typical pasteurella was isolated from the horses.—M.G.G.

Biberstein, E. L., Gills, M. & Knight, H. (1960). Serological types of Pasteurella haemolytica.—Cornell Vet. 50, 283-300. [Authors' summary modified.] 3804

*Past. haemolytica* is made up of at least 11 well-defined serological types. The type-specific substance is a freely diffusible surface material adsorbable on erythrocytes and demonstrable by the indirect haemagglutination test. Classification of types is correlated with certain ecological and physiological characteristics such as host preference, association with disease, lactose fermentation, and catalase production.

Watson, W. A. & Hunter, D. (1960). The isolation of Pasteurella pseudotuberculosis

**from an ovine foetus.** — Vet. Rec. 72, 770-771 & 772.

The organism was isolated from the liver and stomach of an aborted lamb. Small necrotic foci were present in the liver.—R.M.

Skalinskii, E. I. & Nikiforova, N. M. (1959).

[**Electron microscopy of pasteurella from animals.**] — Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 161-173. [In Russian.] 3806

Morphological differences were found between strains of pasteurella from cattle, sheep, pigs and fowls. Also, the more virulent the strain, the thicker the capsule. There are 16 photomicrographs.—R.M.

Sandvik, O. (1960). **The serology of Pseudomonas aeruginosa from bovine udder infections.** — Acta vet. scand. 1, 221-228. [In English. Summaries in German and Norwegian. Author's summary modified.] 3807

116 strains of *Ps. aeruginosa* [*Ps. pyocyannea*] mainly from animals were serologically classified into 7 O-groups, using a slide agglutination test based on heat-resistant O-antigens. The strains from bovine udder infections belonged to one of 4 O-groups, the majority of the strains falling into one particular group. Serological grouping was of value in establishing the pathogenic properties of the isolated strains and in studying the reservoir and spread of infections.

Tiecco, G. (1959). Ricerche sulla differenziazione dei germi appartenenti al genere Pseudomonas. [**Typing of Pseudomonas.**] — Atti Soc. ital. Sci. vet. 13, 522-525. [Summaries in English and French.] 3808

The fermentation test described by Simon (1956) and the decoloration test described by Kujumgiev (1957) were found suitable (particularly the former) for the differentiation of *Ps. pyocyannea* from other *Pseudomonas*.

—T.E.G.R.

Dimić, J., Trbić, B., Andrić, R., Pejin, R. & Atanacković, M. (1960). Kerato-conjunctivitis infectiosa bovum — prilog mehanizmu infekcije i terapije. [**Mechanism of infection in and treatment of bovine infectious keratoconjunctivitis.**] — Vet. Glasn. 14, 81-86. [In Croat. Summary in English.] 3809

Mechanical transmission of keratoconjunctivitis by pin-pricks into the cornea from infected to healthy cows was successful. Transmission by rubbing corneal ulcer material into a superficial corneal abrasion in healthy cattle, failed. Neither was the disease transmissible by injection of aqueous humour

from infected cattle into the anterior eye chamber of healthy cows. The role of flies in the natural transmission of the disease was discussed. Of a number of preparations tried, a 5% chloramphenicol ointment and penicillin were best.—E.G.

Cooper, B. S. (1960). Treatment of conjunctivo-keratitis of cattle and sheep with ethidium bromide. I. Infectious bovine keratitis (I.B.K.). — Vet. Rec. 72, 589-594. [Author's summary modified.] 3810

0·5% Ethidium bromide eye ointment was compared with chloramphenicol, chlortetracycline, oxytetracycline and penicillin in 7 outbreaks of IBK during the summer of 1959. All treatments were equally effective, particularly when used early in infection. At a later stage healing proceeded by vascularization but in all cases treatment halted the progressive corneal invasion.

IBK was produced in young calves and yarded bullocks by the instillation of a *Moraxella (Haemophilus) bovis* suspension into the conjunctival sac. Ethidium treatment for 4 days cleared infected eyes of *H. bovis* but untreated eyes can harbour the organism for up to 22 weeks.

Kliewer, I. P. & Gee, L. L. (1960). The in vitro susceptibility of *Moraxella bovis* to selected antibiotics and sulphonamides. — Tech. Bull. Okla. agric. Exp. Sta. No. T-84, pp. 11. 3811

*Haemophilus* [*Moraxella*] *bovis* was isolated from 21 cattle with infectious keratitis. Cultures were tested for sensitivity to 13 antibiotics and 5 sulphonamides each at several different concentrations. The following produced zones of inhibition 3·6 cm. diam. or more at conc. of 50 µg./ml.: penicillin, erythromycin, tetracycline, chloramphenicol and chlortetracycline. Sulphapyridine and sulphathiazole produced greater zones of inhibition than sulphadiazine, sulphamerazine or sulphanilamide.—R.M.

Kaeckenbeeck, A. & Thomas, J. (1960). A propos des sérotypes colibacillaires dans la diarrhée des veaux. Détermination des antigènes somatiques (O). [**Serotypes of colibacilli in calf scours. Determination of the somatic antigen.**] — Ann. Méd. vét. 104, 232-239. 3812

Schoenaers, F. & Kaeckenbeeck, A. (1960). Les colibacilles entéropathogènes de la flore intestinale du veau normal. [**Enteropathic coli**

bacilli in the intestinal flora of healthy calves.]—Ibid. 240-245.

3813

I. 278 strains were isolated from calves in Belgium, and it was possible to classify 221 of them. 153 (69%) belonged to one of the following O groups: 78, 55, 86 and 15, of which the first two groups were the commonest.

II. The authors isolated over a thousand strains of *E. coli* from 550 healthy calves slaughtered at Cureghem. 79 strains belonged to 15 pathogenic serotypes and these included 10 of group O.78, 8 of group O.15, 4 of group O.55 and 2 of group O.86. Thus 13% of healthy calves carried enteropathogenic strains, and 4·4% carried one of the four strains commonest in Belgium.—R.M.

Paschertz, H. (1959). Ein Beitrag zur sogenannten Ödemkrankheit des Schweines. [Role of *coli* strain O139: K82: H1 in oedema disease of swine.] — Inaug. Diss., Munich pp. 51.

3814

This serotype was isolated from 4 of 100 healthy slaughtered pigs and from 29 of 39 pigs with oedema disease; also from the faeces of 3 of 5 pigs on a farm where the disease had occurred. Attempts to reproduce oedema disease by oral administration of the strain, alone or with other bacteria and with change in feeding, failed.—R.M.

Hawk, H. W., Turner, G. D. & Sykes, J. F. (1960). The effect of ovarian hormones on the uterine defense mechanism during the early stages of induced infection.—Amer. J. vet. Res. 21, 644-648. [Authors' summary modified.]

3815

In studies using rabbits, progesterone inhibited the bactericidal activity of the uterus against *Escherichia coli*. Oestrogen stimulated the clearance of *E. coli* cells from the uterine lumen. The ovarian hormones apparently influenced the uterine defences through an effect on the leucocytic response, which was measured by the concentration of leucocytes present in the uterine lumen. Progesterone inhibited the response and oestrogen stimulated it. The effects of the hormones on the leucocytic response could not be accounted for by variation in the normal leucocytic infiltration of the endometrium.

Božinović-Saljinski, T. & Gramatikovski, G. (1960). Prilog poznavanju raširenosti Sal. abortus ovis u NR Makedoniji. [Incidence of *Salmonella abortus-ovis* infection in Mace-

donia.]—Vet. Glasn. 14, 251-253. [In Croatian. Summary in French.]

3816

In Macedonia incidence of abortion in ewes varied from 9-36% a flock. The commonest cause was *S. abortus-ovis*. Of a total of 16,145 pregnant ewes, 2,241 aborted. Mortality in ewes was low.—E.G.

Contini, A. (1959). Su di una nuova forma di aborto infettivo dei suini: l'aborto da Salmonella. [Salmonella abortion in pigs.]—Atti Soc. Ital. Sci. vet. 13, 678-680. [Summaries in English and French.]

3817

In each of 2 herds 7 sows aborted at 65-75 days. A salmonella, isolated from the vaginal fluid and placenta and from the heart and stomach of foetuses, was classified as a new serotype with the antigenic structure 1, 9 c 1, 6. Serum of aborting sows and of boars agglutinated *S. abortus-ovis* at 1:160 and the salmonella isolated from the sows and foetuses at 1:640; it did not agglutinate *Brucella abortus* or *melitensis*.—T.E.G.R.

Julian, R. J. & Hutchinson, J. A. (1960). Arthritis in a bitch caused by *Salmonella heidelberg*.—Canad. vet. J. 1, 265.

3818

The organism was isolated from synovial fluid aspirated from a swollen stifle joint. Ten days previously the bitch had aborted in the sixth week of pregnancy.—R.M.

Sato, S., Yoshida, T., Suwa, T., Nakamura, H., Ando, K. & Watanabe, M. (1960). [Studies on *pullorum* disease. I. Relationship between agglutination titre and isolation of organism.]—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 59-70. [In Japanese. Summary in English.]

3819

210 chickens positive to the whole blood agglutination test for *S. pullorum* infection were obtained. Agglutination titres were followed for a year in 39: ten remained positive, 14 became negative and 15 gave both positive and negative reactions. In pullets and hens the most frequent sites of isolation were the gall bladder, pancreas, peritoneum and spleen, and in hens alone, the ovary. Isolations were often made from chickens killed within 40 days after they became negative and from 2 cocks that had been negative for 8 months and a year. The rate of agreement between the whole blood test and the tube test was 88·4%. *S. pullorum* was isolated from 87·2% of chickens positive and 30·2% of those negative to the whole blood test and from 88·9% of positive and 30·4% of negative reactors to the tube test.—M.G.G.

Klimes, B., Kruza, B. & Tesarcik, J. (1960). Über den Einfluss von Furazolidon auf serologische Reaktionen bei pulloruminfizierten Küiken. [Influence of furazolidone on serological reactions in chicks with pullorum disease.]—Tierärztl. Umsch. 15, 129-133. 3820

Treatment with furazolidone of chicks infected orally with *Salmonella pullorum* reduced the number positive to the rapid blood agglutination test. None of 24 treated with 0·03% furazolidone were positive, compared with 9 of 27 treated with 0·011%, and 17 of 25 untreated chicks. A much more sensitive test was the haemagglutination test with sensitized erythrocytes. It detected infected chicks earlier and was positive for 21 of 24 chicks treated with 0·03% furazolidone, 19 of 27 treated with 0·011%, and 20 of 25 untreated chicks.—M.G.G.

I. Watanabe, S., Hashimoto, K. & Sakazaki, R. (1960). [Studies on salmonella infection in hen's eggs during incubation. VI. Detection of *S. pullorum* and agglutinin in dead chick embryos.] — Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 29-35. [In Japanese. Summary in English.] 3821

II. Watanabe, S., Nagai, T., Hashimoto, K., Kume, T. & Sakazaki, R. (1960). [Studies on salmonella infection in hen's eggs during incubation. VII. Transmission to eggs of agglutinin and immunity from hens infected with *S. pullorum*.] — Ibid. pp. 37-49. [In Japanese. Summary in English.] 3822

I. Yolks were obtained from 205 chick embryos that died between the 5th and 21st days of development. Agglutinin against *S. pullorum* was found in 47, of which 24 yielded the organism. Only 4 yolks contained *S. pullorum* without showing agglutinin.

II. Agglutinin titres in the yolk of eggs laid by 5 hens infected i/v or naturally with *S. pullorum* corresponded with the serum titres of the hens. Agglutinin was not found, however, in the yolk of some eggs, nor in any of the eggs laid by 3 hens infected orally with *S. pullorum*. The embryos of eggs laid by infected hens lived longer than embryos from uninfected hens when *S. pullorum* was injected into the yolk sac immediately before incubation or i/v on the 12th or 14th days of incubation.—M.G.G.

I. Volik, E. K., Malyavin, A. G., Romin, A. V., Nikolaeva, E. Y. & Gulyaevskaya, P. N. (1959). [Preparation of diagnostic antigen for fowl typhoid and pullorum disease by the vat method.] — Trudy nauchno-

kontrol. Inst. vet. Preparatov 8, 189-194. [In Russian.] 3823

II. Kolesov, S. G., Malyavin, A. G., Mikhailov, N. A., Romin, A. V. & Gulyaevskaya, P. N. (1959). [Preparation and properties of dried antigen for pullorum disease and fowl typhoid.] — Ibid. 195-198. [In Russian.] 3824

I. Preparation of the culture medium was described: it should contain not less than 150 mg. % of amino nitrogen. Selected strains were cultured for 16-20 hours in vats to give a final conc. of not less than 10-20 thousand million bacteria per ml. Preparation and testing of formalized antigen is described.

II. Organisms cultured in vats were separated from the culture medium and suspended in sterile sodium citrate soln. to obtain a conc. of  $10^{10}$  organisms per ml. Thiomersal was added to give a conc. of 1 : 1000. The suspension was run off into ampoules of 1 or 2 ml. These were frozen at -45°C. for 4-6 hours then vacuum dried in the frozen state. Results of field trials are given.—R.M.

Kralj, M. (1960). Prilog suvremenoj dijagnostici i subijanju kokošnjeg tifusa u Narodnoj Republici Hrvatskoj. [Diagnosis and control of fowl typhoid in Croatia.] — Vet. Glasn. 14, 259-264. [In Croat. Summary in German.] 3825

During 1953-58 in Croatia, 397,189 fowls owned by either agricultural co-operatives, state farms, or private small-holders, were examined by the agglutination reaction for fowl typhoid and 3,268 were found to be carriers. Generally incidence decreased during the latter part of the period under review. There was, however, one serious outbreak of pullorum disease in 1958, introduced by the use of hatching eggs from an infected source. State control of avian salmonellosis, irrespective of the type of ownership, was advocated.

—E.G.

Rosaschino, F. & Corsico, G. (1959). Ricerche sulla mastite brucellare bovina. [Bovine mastitis attributed to *Brucella abortus*.] — Atti Soc. Ital. Sci. vet. 13, 704-707. [Summaries in French and German.] 3826

In 8 cows excreting *Br. abortus* in milk there were no clinical manifestations; histological lesions are described.—T.E.G.R.

Benning, W. (1959). Quantitative Untersuchungen über das Vorkommen von *Brucella abortus* im Euter, den Euter- und Darmbeinlymphknoten brucellöser Schlachtrinder.

[Quantitative studies on *Br. abortus* in the udder and in the mammary and external iliac lymph nodes.]—Inaug. Diss., Munich pp. 52. 3827

Brucella was isolated from udder tissue in 37 of 50 slaughtered reactors. In 19 of the 37 the concentration of brucella organisms, assessed from colony counts, ranged from 50 to over 1,000 per g. of tissue (11,000 per g. in one case). Counts are also given for the mammary and external iliac lymph nodes which yielded cultures in 24 and 14 cases, respectively.—R.M.

— (1960). Control of bovine brucellosis. Report of Technical Committee.—Aust. vet. J. 36, 321-327. 3828

This statement, prepared by a specially appointed Technical Committee of the Australian Veterinary Association, deals with the prevalence of, and economic loss due to brucellosis, its diagnosis by serological and microscopical techniques, and cultural recovery of *Br. abortus*. Methods of control are summarized and a statement made of recommended action and the Association's policy for control.—A. CULEY.

Marković, P., Cirić, L. & Petrović, M. (1960). Raširenost bruceloze goveda na socijalističkim gazdinstvima u APV i planske mere na njenom susbijanju i iskorenjivanju u periodu od 1956 do 1959 godine. [Incidence of brucellosis in Vojvodina and its control during 1956-59.]—Vet. Glasn. 14, 323-326. [In Croat. Summary in German.] 3829

Results obtained in the control of bovine brucellosis in Vojvodina during 1956-1959 are analysed. Control measures included slaughter of reactors. During the period under review 256,000 blood samples were examined and 1,272 were positive. It was estimated that the proportion of newly infected cattle had fallen from 1.8% in 1956 to 0.05% in 1959.—E.G.

Payne, J. M. (1960). The pathogenesis of experimental brucellosis in virgin heifers with and without continuous progesterone treatment.—J. Endocrin. 20, 345-354. [Author's summary modified.] 3830

Daily injections of progesterone were given to six adult heifers, which, with six untreated controls, were then infected with virulent *Brucella abortus* Strain 544.

The pathogenesis of the disease as measured by *Br. abortus* counts in various tissues and organs, and the histology of the lesions, was less progressive and milder than

in the pregnant cow. In the non-gravid animals the counts of *Br. abortus* in the various tissues were very low and the infection did not disseminate very widely in the body; the uterus remained free from infection. In addition, the lesions in the lymphoid tissue were milder than those found previously in similarly infected pregnant animals.

Progesterone administration exerted a profound effect on the genital tract, but it had no effect on the pathogenesis of brucellosis. It is concluded that progesterone is unlikely to be responsible for the susceptibility of the pregnant cow to brucellosis.

Suire, A. (1960). Les vaccinations anti-Brucella par la souche vivante B. 112. Étude et comparaison de différentes méthodes sur souris. [Immunization of mice against brucellosis with the living strain B 112.]—Ann. Inst. Pasteur 99, 241-252. [Summary in English.] 3831

Live avirulent *Br. abortus* Strain B 112, described by Renoux [V.B. 22, 2405], was inoculated into 80 mice either alone or with one of the following: inert adjuvant (liquid paraffin); extracts of cell walls or cell contents of *Br. melitensis*; toxoid from *Br. melitensis*. The mice received one immunizing injection and a month later they were inoculated with virulent *Br. melitensis*. They were killed between 7 and 49 days after challenge. The best protection, judged by absence of bacteria in organs and lymph nodes, was afforded by a combination of B 112 and cell-wall extract of *Br. melitensis*.—R.M.

Ivanov, M. M. & Kolomakin, G. A. (1959). [Transfer of brucella from sheep to cattle.]—Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 46-50. 3832

When *Br. melitensis* was transmitted to cows and excreted in cows' milk, its properties and pathogenicity did not change; it caused abortion in from 4 to 25% of infected cows.—R.M.

Biggi, P. & Sessi, P. (1959). Infezione brucellare sperimentale in pecore autosterilizzatesi e nelle loro discendenti. [Experimental Brucella infection in sheep after spontaneous recovery and in their offspring.]—Atti Soc. Ital. Sci. vet. 13, 700-704. [Summaries in English and French.] 3833

Three sheep that had made a spontaneous recovery from experimental *Br. melitensis* infection, and their progeny (5 ewe lambs) born after recovery were each inoculated

by the s/c and conjunctival routes, with 2 million *Br. melitensis* organisms. In the dams there was a slight increase in agglutinin titres and a marked response to the allergic test. The offspring developed typical acute infection.—T.E.G.R.

Ferenčík, M. (1960). Učinok niektorých dezinfekčných látok na brucely. [Action of disinfectants on brucella.]—Vet. Čas. 9, 194-201. [In Slovak. Summaries in English, German and Russian.]

3834

Corrosive sublimate, phenyl mercuric borate and "Ajatin" (benzalkonium chloride) were the most effective inhibitors of growth and respiration in *Br. abortus*, *melitensis*, *suis* and *Haemophilus bronchisepticus*. Among other disinfectants tested were thiomersal, hydrogen peroxide, potassium permanganate, ethyl alcohol, phenol and Lysol.—E.G.

I. Džoljić, D. A. (1960). Leptospiroze kao uzrok pobačaja kod goveda u NR Srbiji. [Leptospiral abortion in cattle in Serbia.]—Vet. Glasn. 14, 407-412. [In Croat. Summary in English.]

3835

II. Džoljić, D. A. (1960). Leptospiroze kao uzrok pobačaja kod svinja u Srbiji. [Leptospiral abortion in pigs in Serbia.]—Ibid. 505-509. [In Croat.]

3836

I. Serum samples from cows belonging to several herds, which had aborted, were negative for brucellosis but yielded positive agglutination-lysis reactions using *L. pomona* and *L. mitis* as antigens. Titres of 1 : 100 were classed as doubtful, those of 1 : 300 and over as positive. Some of the cows had mastitis. Abortion, stillbirth and neonatal mortality, observed in pigs on one of the farms was confirmed serologically as leptospirosis.

II. Leptospirosis was diagnosed in a number of sows from various farms, which had either aborted or given birth to a proportion of stillborn piglets. With very few exceptions serological examination for brucellosis was negative. Other causes of abortion were excluded. The majority yielded positive titres against *L. pomona* or *L. mitis*. On some farms leptospirosis was also diagnosed clinically and serologically in horses and cows.—E.G.

I. Farina, R. (1959). Leptospirosi delle pecore. Infezione sperimentale da *L. icterohaemorrhagiae*. I. Premessa. [Leptospirosis in sheep. Experimental infection with *L. icterohaemorrhagiae*. I. Introduction.] — Ann. Fac. Med. vet. Pisa 12, 1-5.

3837

II. Farina, R. & Sessi, P. (1959). Leptospirosi delle pecore. Infezione sperimentale da *L. icterohaemorrhagiae*. II. Ricerche batteriologico-immunologiche. [Leptospirosis in sheep. Experimental infection with *L. icterohaemorrhagiae*. II. Bacteriology and immunology.] — Ibid. 6-14. [Summaries in English and French.]

3838

III. Paltrinieri, S., Salutini, E. & Buonaccorsi, A. (1959). Leptospirosi delle pecore. Infezione sperimentale da *L. icterohaemorrhagiae*. III. Ricercheematologiche. [Leptospirosis in sheep. Experimental infection with *L. icterohaemorrhagiae*. III. Haematology.] — Ibid. 15-41. [Summaries in English and French.]

3839

IV. Pierotti, P. (1959). Leptospirosi delle pecore. Infezione sperimentale da *L. icterohaemorrhagiae*. IV. Reperti anatomo-istopatologici. [Leptospirosis in sheep. Experimental infection with *L. icterohaemorrhagiae*. IV. Lesions.] — Ibid. 42-49. [Summaries in English and French.]

3840

I. In experiments described in this series of papers it was considered preferable to use *L. icterohaemorrhagiae* because, owing to the high percentage of carrier rats, it is highly prevalent in Italy.

II. Twelve sheep (9 pregnant), aged 18-24 months were inoculated with virulent *L. icterohaemorrhagiae* (6 s/c and 6 by combined s/c and conjunctival routes); 5 sheep (3 pregnant) were controls. There was a febrile reaction, transient anorexia and malaise, and no abortions. The organism was demonstrable in the blood from the 2nd to the 6th day; antibodies were generally demonstrable on the 5th day, maximum response (1 : 50,000 to 1 : 100,000) occurring at 2-3 weeks. Antibodies were demonstrable after 17-38 days in the urine of 4 animals of which 3 excreted leptospira in the urine for 5-10 days. The organism was not demonstrable in the organs of sheep killed after 20-60 days nor in foetal fluids, blood or organs. Antibodies were not demonstrable in foetal blood or in the blood of lambs at birth but appeared in high titres after ingestion of colostrum. Direct transmission from infected animals to controls or to new-born lambs did not occur.

III. There was a slight decrease in r.b.c. and a significant monocytosis after 5-10 days; a slight increase in erythrocyte resistance and sedimentation rate; an increase in blood urea and bilirubin concentrations; normal blood sugar levels; increased prothrombin time and

positive serum lability test (by the method described by Wunderly-Wuhrmann).

IV. In 8 of the animals, slaughtered after 20, 30, 40 or 60 days, there were no appreciable gross lesions. In the kidneys of one there were small, greyish-white foci characterized histologically by granulocyte, lymphocyte, monocyte and histiocyte infiltration. In the kidneys of all there was inflammation of the tubules with initial periglomerular and intertubular infiltration. Cellular damage was observed in the liver of all the sheep and in one there was also focal necrosis. Microscopic examination of the liver, kidneys and other organs did not reveal leptospira.—T.E.G.R.

Menges, R. W., Galton, M. M. & Habermann, R. T. (1960). Culture and serologic studies on four dogs inoculated with two leptospiral serotypes, *Leptospira pomona* and *Leptospira canicola*. — Amer. J. vet. Res. 21, 371-376. 3841

Four dogs were inoculated i/p with *L. pomona* and 78 days later with *L. canicola*. Samples of urine obtained by puncture of the bladder yielded *L. pomona* for 10½ months after infection in one dog and *L. canicola* for 8 months in another dog. The urine of the other two contained leptospira for 2-13 weeks after infection. Serological titres were sometimes negative at the time of isolation of leptospira from the urine. Puncture of the bladder up to 75 times did not cause gross or microscopic lesions.—M.G.G.

Ferris, D. H., Hanson, L. E., Hoerlein, A. B. & Beamer, P. D. (1960). Experimental infection of white-tailed deer with *Leptospira pomona*. — Cornell Vet. 50, 236-250. [Authors' summary modified.] 3842

The clinical, bacteriological, pathological, and serological responses of four adult female deer to experimental inoculation with *L. pomona* were studied. No immediate clinical signs were observed in two; the other two developed moderate febrile reactions (104°F.) 1 week after inoculation. Leptospires were isolated from the blood of two deer on the 4th day after inoculation, but at no other time. They were not isolated from the urine. The earliest agglutination-lysis titres appeared 6 days after inoculation in two deer; in the other two a titre of 1:10 appeared on the 7th and on the 12th day respectively.

I. Labzoffsky, N. A. & Kelen, A. E. (1960). Studies on complement fixing antigens of leptospirae. — Canad. J. Microbiol. 6, 453-462. 3843

II. Kelen, A. E. & Labzoffsky, N. A. (1960). Studies on latex agglutination test for leptospirosis. — Ibid. 463-473. [Authors' summaries modified.] 3844

I. Methods of preparation of "whole" (polyvalent) and type-specific antigens from leptospiral cultures for use in the complement fixation test are outlined. Considerable cross-reaction was observed with "whole" antigens prepared from *L. pomona*, *canicola*, and *icterohaemorrhagiae* and their respective rabbit hyperimmune sera, but titres with homologous sera were invariably higher. These cross reactions were not as pronounced with sera from cattle naturally infected with *L. pomona*, where about 43% of the sera reacted with homologous antigen only. Type-specific antibodies appeared earlier and persisted longer than group-specific antibodies. Therefore the use of polyvalent antigen for routine screening of leptospiral antisera is advocated. Type-specific antigens are recommended for more precise diagnosis.

II. Polystyrene latex particles suspended in a buffer solution were coated with soluble antigens of *Leptospira canicola*, *icterohaemorrhagiae*, or *pomona*, and used as agglutinating antigens for testing sera of various origin.

The results were as specific and sensitive as those of other serological tests. The advantages of the latex agglutination test were its simplicity and rapidity and the use of a non-infective, stable antigen, which eliminates the necessity of maintaining live leptospiral cultures in the laboratory.

Shimizu, T., Yanagawa, R., Hiramune, T., Fujita, J. & Ishii, S. (1960). Cultural studies on leptospirae. III. A comparison between Cox's and Korthof's media for cultivation of leptospirae. — Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 175-183. [In English. Summary in Japanese.] 3845

Recovery of leptospira from the kidneys of infected mice was successful in 47% of attempts in Korthof's medium and in 20% in Cox's medium, and from the blood of infected g.pigs in 87% in Korthof's medium and 41% in Cox's medium. Growth was more profuse in Cox's medium. The poor results with Cox's medium were considered to be due to excessive haemoglobin.—M.G.G.

Malyavin, A. G., Romin, A. V., Artyaev, A. I., Sizonov, P. K. & Chub, G. G. (1959). [Antigenic and immunogenic properties of leptospira cultures and a comparison of chinosol and phenol vaccines.] — Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 183-188. [In Russian.] 3846

Numerous batches of vaccine were tested and compared at various times after manufacture by means of the agglutinin response of rabbits. Phenol-inactivated vaccines gave the best results.—R.M.

Katić, R., Puhač, I. & Vukićević, Z. (1960). Prilog poznavanju uticaja nekih higijenskih faktora na nastajanje enterotoksemije ovaca izazvane sa W. agni paludis C. [Effect of hygienic conditions on incidence of enterotoxaemia in sheep.] — Vet. Glasn. 14, 235-238. [In Croat. Summary in French.] 3847

An account of experimental enterotoxaemia due to *Clostridium welchii*, Type C toxin, injected directly into the small intestine of sheep, kept on various diets and under various hygienic conditions. Two sheep, kept for two weeks previously on a lucerne hay diet, survived infection; two, given a normal diet, interrupted by periods of fasting, and given 3 baths at certain intervals before infection, resisted infection; whereas two sheep kept on fresh clover for two weeks died 36 and 48 hours after infection.—E.G.

Gardiner, M. R. & Parnell, I. W. (1960). A note on the possible association of *Muellerius capillaris* with enterotoxaemia.—Brit. vet. J. 116, 247-251. [Authors' summary.] 3848

An outbreak of disease in adult ewes in south-western Australia is described. An association of enterotoxaemia with heavy infestations of fourth stage *M. capillaris* was found and it is suggested that the migratory stage may have predisposed to clinical enterotoxaemia.

Kagan, F. I. & Kolesova, A. I. (1959). [Further trials of polyvalent concentrated aluminium hydroxide vaccine against braxy, enterotoxaemia and lamb dysentery.] — Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 114-118. [In Russian.] 3849

Field experience indicated that the mixed vaccine prepared from *Cl. septicum*, *oedematiens* and *welchii* Type B also protected sheep against Types C, D and F of *welchii* and *Cl. gigas*. In flocks where it was used, the number of sheep reared increased by as

much as 8 times. Freezing the vaccine, with or without glycerin, did not affect its potency. [See also *V.B.* 29, 656.]—R.M.

Cooper, M. S., Martini, F. V. & Personeus, G. R. (1960). Further studies on *Clostridium chauvoei* infections and immunity in laboratory animals. — Cornell Vet. 50, 301-308. [Authors' summary modified.] 3850

Normal g.pigs were injected with various numbers of washed viable *Cl. chauvoei* spores in several concentrations of  $\text{CaCl}_2$ . The latter compound is used as a tissue debilitant and under certain conditions will foster a fatal infection, whereas the same spores in distilled water are innocuous. When 2·5%  $\text{CaCl}_2$  was used nearly all the g.pigs died after injection with as few as 10 spores, whereas when the conc. was reduced to 0·5% not many died even when 12,700 spores were injected. Some differences in virulence were observed between strains of *Cl. chauvoei*. A thousandfold difference in the number of spores inoculated had no effect on mortality of immunized mice.

Sato, S., Hashimoto, K. & Inayoshi, D. (1960). [Preparation of tetanus antitoxin in horses and cattle.] — Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 71-80. [In Japanese. Summary in English.] 3851

The incidence of anaphylaxis was 4·6% in lambs given tetanus antitoxin prepared in horses immunized with tetanus toxin derived from the filtrate of liver broth culture. A new antitoxin was prepared in cattle and horses by giving 3 weekly, increasing doses of purified toxoid, followed 2 weeks later by 7 increasing doses of purified toxin at intervals of 1-2 weeks. No anaphylaxis was seen in 26 goats and 151 sheep and lambs given this antitoxin s/c or i/v.—M.G.G.

Hulet, C. V., Ercanbrack, S. K., Price, D. A., Humphrey, R. D., Frank, F. W. & Meiners-hagen, W. A. (1960). Effects of certain antibiotics in the treatment of vibriosis in sheep. — Amer. J. vet. Res. 21, 441-444. 3852

In 2 flocks with endemic vibriosis, each of about 1,450 sheep, the young ewes were treated a few days before lambing as follows: 80 mg. daily of chlortetracycline hydrochloride in the food, or 2 i/m injections on consecutive days of 800,000 units procaine penicillin and one g. streptomycin; or both treatments together. 86%–95% of ewes in the treated groups bore live lambs, compared with 76%–78% in untreated groups. Chlortetracycline was the least

effective of the antibiotics, and did not enhance the efficacy of penicillin-streptomycin.

—M.G.G.

Gilder, R. P. (1960). *Foot diseases of cattle.* —Aust. vet. J. 36, 151-154. 3853

Foot rot is the main disease affecting feet of dairy cattle and is most common when mud in the cowyard and around gateways is hardening. Concrete paths to the cowshed and around watering places are of assistance. The need for early treatment is stressed. The affected foot must be examined for foreign bodies. Full doses of sulphadimidine intravenously give satisfactory results. Prophylactic vaccination with a killed *Fusiformis necrophorus* vaccine appears to be of value. Other causes of lameness such as laminitis, sprains, corns and ergotism are briefly discussed.

—D. F. STEWART.

Ivanov, M. M. (1959). [Simultaneous immunization of sheep against brucellosis and paratyphoid.] —Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 40-45. [In Russian.] 3854

Because in the author's experience brucella and salmonella were closely associated as causes of abortion in sheep, immunization by injection of *Br. abortus* Strain 19 and *S. abortus-ovis* formalized vaccine simultaneously but at different sites was tested on lab. animals and sheep. It was necessary to repeat inoculation of the salmonella vaccine alone after 8 days. Better immunity to brucellosis was achieved with 30 or 60 thousand million organisms of Strain 19 than with 2 or 10 thousand million organisms. Simultaneous inoculation of 1,500 ewes led to a big reduction in the number of abortions and increased the number of lambs born.

—R.M.

Kagan, F. I., Nikiforova, N. M. & Kolesova, A. I. (1959). [Mixed vaccine against black-leg, malignant oedema and pasteurellosis in cattle.] —Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 124-128. [In Russian.] 3855

A mixture of concentrated vaccines against *Cl. chauvoei*, *Cl. septicum* and *Past. septica* was tested on lab. animals and on 35 calves. A group of 9 calves (plus 6 controls) were inoculated twice at a fortnight's interval. They resisted challenge with one or other of the 3 bacteria 21 days after the second inoculation. The mixed vaccine retained its immunizing properties for a year. A field trial on 840 cattle failed to reveal adverse effects, apart from slight swelling persisting 5-6 days at the injection site.—R.M.

✓ Loftsgård, G. & Lindqvist, K. (1960). *Bovine mycotic mastitis.* —Acta vet. scand. 1, 201-220. [In English. Summaries in German and Norwegian. Authors' summary modified.] 3856

Mycological examination of 980 milk samples from clinically normal quarters indicated that yeasts do not belong to the normal microflora of the udder. 5 cases of mycotic infections were found in 480 samples from abnormal quarters. The authors described 7 cases of udder infections from which the following agents were isolated: *Saccharomyces marxianus*, *Saccharomyces fragilis*, *Candida krusei*, *Candida parapsilosis* var. *intermedia* and a *Trichosporon* sp.

Experimental infection of cows with 2 of the isolated strains produced distinct local and general symptoms. None of the strains was sensitive to penicillin, streptomycin, chloramphenicol, chlortetracycline or oxytetracycline; the last two antibiotics decidedly stimulated their growth. All were sensitive to polymyxin B, nystatin and trichamycin.

✓ Hillermark, K. (1960). *Nocardia asteroides* als Ursache boviner Mastitis. [Nocardia asteroides as a cause of bovine mastitis.] —Acta vet. scand. 1, 281-293. [In German. Summaries in English and Swedish. English summary modified.] 3857

A clinical description is given of a form of bovine mastitis accompanied by fever up to 41°C. and leading to diffuse fibrosis with abscess formation in the ventral portion of the affected quarters.

The mammary secretion was grey with yellowish-grey clumps. Abscess contents were viscous, yellowish-grey, and mixed with yellowish-green solid material and white mycelial clumps. Branching and non-branching Gram-positive filaments having all the properties of *N. asteroides* were the only organisms seen in smears.

Hörter, R. (1960). *Aspergillus-Dermatomykose bei abortierten Rinderfeten.* [Aspergillus dermatomycosis in aborted bovine foetuses.] —Dtsch. tierärztl. Wschr. 67, 380-383. [Summary in English.] 3858

An account of two cases.—R.M.

✓ Jellison, W. L., Vinson, J. W. & Holager, E. (1960). *Haplomycosis in Norway.* —Acta path. microbiol. scand. 49, 480-484. [In English.] 3859

The authors examined 493 wild animals of 14 genera and also 60 pigs and 9 cats.

Histological evidence of *Haplosporangium parvum* [*Emmonsia parva*] infection was found in a water vole and in 4 of 10 *Microtus* voles, but not in pigs. There was circumstantial evidence that the fungus might be the cause of an epidemic nephritis in human beings in Norway.—R.M.

✓ Wind, S. & Yacowitz, H. (1960). Use of Mycostatin in the drinking water for the treatment of crop mycosis in turkeys.—Poult. Sci. 39, 904-905. [Authors' summary modified.] **3860**

Nystatin dispersed in water with sodium lauryl sulphate was effective in the treatment of established crop mycosis of turkeys when used continuously at levels of 62·5 to 250 mg. per litre (p.p.m.) of drinking water for 5 days. It was well tolerated and did not reduce water consumption.

✓ Bridges, C. H. & Beasley, J. N. (1960). Maduromycotic mycetomas in animals—*Brachycladlum spiciferum* Bainier as an etiologic agent.—J. Amer. vet. med. Ass. 137, 192-201. [Authors' summary modified.] **3861**

Maduromycotic mycetomas have been diagnosed in a cat, a horse, and a dog. *Brachycladlum spiciferum* was identified as a causative agent in the cat and the horse.

Generally, the clinical signs were chronic inflammation with formation of nodular granulomatous masses in the foot of the cat, skin of the head and body of the horse, and in a prescapular lymph node of the dog. Pigmented colonies of fungus could be seen as brown to black specks in the lesions from the dog and the horse. Colonies of fungus were easily found in stained smears of pus taken from draining sinuses of the cat's foot.

Although there was considerable variation in the shape of the microcolonies in all 3 animals and in the pigmentation of the fungus in the cat's foot from time to time, chlamydospores and hyphae were present at all times.

Parker, A. M. (1960). Contagious bovine pleuropneumonia: production of complement fixing antigen and some observations on its use. Parts I & II.—Bull. epiz. Dis. Afr. 8, 5-9 & 111-119. [Summaries in French.] **3862**

Preparation of antigen by the method of Campbell & Turner [V.B. 23, 3308] was discussed. The c.f. test was compared with agglutination and gel diffusion tests on sera from infected cattle. The agglutination test was less reliable than the c.f. test.—R.M.

Villemot, J.-M. & Provost, A. (1960). Isolation au Tchad de microorganismes du groupe de la péripleunomie appartenant à l'espèce *Mycoplasma (Astrococcus) hominis*. [PPLO from human beings in Chad, serologically related to bovine genital strains.]—Ann. Inst. Pasteur 99, 114-119. [Summary in English.] **3863**

Two PPLO were isolated, one from an infant with diarrhoea and the other from a woman with cystitis. Cross-agglutination tests and cultural and biochemical properties showed that the strains had a closer affinity to strains isolated from the genital tract of zebu cows than to human strains previously described.—R.M.

Osborn, O. H., Mataney, C. F. & Pomeroy, B. S. (1960). The effects of antibiotics on the infectious sinusitis agent of turkeys: the in vivo development of antibiotic-resistant strains of *Mycoplasma*.—Ann. N.Y. Acad. Sci. 79, 581-587. **3864**

An infected flock of 116 turkeys was divided into 8 groups. One was left untreated and the others were treated for 5 months with one of the tetracycline antibiotics or erythromycin in the food at a conc. of 1 kg. per ton and/or one of the same antibiotics also dihydrostreptomycin by i/v or i/m inj. once every 48 hours for the first 3 weeks; thereafter once a week. At the termination of treatment some of the strains of PPLO isolated were resistant to the antibiotics (with the exception of erythromycin) and the resistant strains could be transmitted through eggs. It was relatively easy to induce resistance to streptomycin, but resistance to the tetracyclines developed only after prolonged therapy. Outbreaks caused by a streptomycin-resistant strain may be successfully treated with erythromycin, carbomycin or oxytetracycline.

—R.M.

Banić, J. (1959). [Microflora of normal and diseased conjunctiva in horses and dogs.]—Acta vet., Belgrade 9, No. 3 pp. 97-108. [In Serbian. Summary in German.] **3865**

*Staphylococcus aureus* was isolated from the eyes of many healthy horses and dogs in Yugoslavia. From diseased eyes *Staph. aureus* was isolated together with *Streptococcus pyogenes* and *Pseudomonas pyocyanea*. These micro-organisms were regarded as the secondary cause of purulent conjunctivitis, since attempts to produce this condition experimentally with these organisms in rabbits,

dogs or horses, failed. It was stated that lowering of local resistance in the conjunctiva was the main cause of this condition.—E.G.

March, B. E., Goudie, C. & Biely, J. (1960). **The effect of management factors on the intestinal bacteria and the growth rate of chicks.**—J. agric. Sci. 55, 61-68. [Authors' summary modified.] 3866

The apparent cleanliness of the premises in which chicks are reared has little bearing on the growth rate of chicks within a given environment.

Bacterial counts of faeces from chicks reared under clean or extremely contaminated conditions showed no difference.

Delaying feeding until 72 hours after hatching retarded growth to at least 7 weeks

*See also absts. 4103 (report, West of Scotland Agricultural College); 4104 (report, Western Australia); 4105 (report, North Borneo); 4106 (report, South Holland); 4107-4108 (books, bacteriology); 4109 (book, brucellosis); 4110 (book, dermatophyte infections); 4111 (book, bacteriophages).*

#### DISEASES CAUSED BY PROTOZOAN PARASITES

Cantrell, W. (1960). **The pattern of antigenic variation in *Trypanosoma equiperdum*.**—J. infect. Dis. 107, 29-33. [Author's summary modified.] 3867

C. concluded that dissimilar antigenic types of *T. equiperdum* are capable of mutating to the same antigenic type and that one type is capable of giving rise to mutants of more than one kind.

Stephen, L. E. & Gray, A. R. (1960). **The trypanocidal activity of nucleocidin against *Trypanosoma vivax* in West African zebu cattle.**—J. Parasit. 46, 509-514. [Authors' summary modified.] 3868

The antibiotic, nucleocidin, appears to have considerable activity against *T. vivax* infections in West African White Fulani zebu cattle. A single i/m inj. of 0.025 mg. per kg. body wt, cleared the peripheral blood of trypanosomes within 20 hours.

The infection was not cured, however, and relapses occurred 18, 24, and 33 days after treatment in the 3 animals used in the experiment.

Yaeger, R. G. & Miller, O. N. (1960). **Effect of malnutrition on susceptibility of rats to *Trypanosoma cruzi*. I. Thiamine deficiency.**—Exp. Parasit. 9, 215-222. [Authors' summary modified.] 3869

Parasitaemia in thiamine-deficient rats was generally higher than in controls except in instances of concomitant respiratory infec-

tion. If the age of the chicks was calculated from the time at which the chicks were fed rather than the date of hatch, the weights of the chicks fed 72 hours after hatching corresponded with those of the chicks fed immediately.

The contents of the duodenum and mesenteric intestine showed higher bacterial counts when feeding was delayed for 72 hours than when feed was given shortly after hatching. This effect was no longer evident after the chicks were 1 week old.

Administration of penicillin in the water did not reduce the difference in growth rates between the chicks fed immediately and those from which feed was withheld.

Antibiotics may decrease the thickness of the intestinal wall without stimulating growth.

tion. In most instances lesions were more extensive and parasites were more common in heart tissues from thiamine-deficient rats than in those of controls.

Davis, L. R. & Smith, W. N. (1960). **The use of acridine orange and fluorescence microscopy for examining oocysts of coccidia of cattle and sheep.**—J. Prot. 7, Suppl. p. 12.

Acridine orange in 0.2% soln. at pH 4.7 was superior to eight other dyes for staining sporulated oocysts of *Eimeria ah-sa-ta* from sheep, or *E. auburnensis* from cattle, for examination by fluorescence microscopy using a high-pressure mercury arc.

More oocysts fluoresced if they were heated to 60°C. for one hour and then treated with Antiformin to remove the cell coat before staining. Sporocysts liberated by rolling oocysts between microscope slides were best stained with 0.002 and 0.0002% dilutions of dye.—R.M.

Smith, W. N., Davis, L. R. & Bowman, G. W. (1960). **The pathogenicity of *Eimeria ah-sa-ta*, a coccidium of sheep.**—J. Prot. 7, Suppl. p. 8. [Authors' abst. modified.] 3871

Preliminary studies on *Eimeria ah-sa-ta*, recently found in sheep in Alabama, indicated that it is more pathogenic than the 3 previously known coccidia of sheep. Oral inoculations given to 15 lambs (1 to 3 months old) resulted in the death of 7 of them and visible clinical

symptoms in the other 8. Fatal infections were produced by inoculation of 100,000 oocysts in 4 of 9 lambs. Inoculation of 800,000 oocysts resulted in death after 4 days; 450,000 oocysts resulted in death after 12 days; 150,000, after 16 days; and 100,000, after 23–32 days. Clinical symptoms were soft faeces beginning on the 15th to 16th day, loss of appetite, and listlessness. Those which died became emaciated and were unable to stand.

Examination of the intestines showed thickened, somewhat oedematous areas in the upper part; Peyer's patches were reddened, as were the last 8 to 10 inches of the intestine adjacent to the caecum. Only a few schizonts were visible to the naked eye.

Diehl, J. F. (1960). Effect of hepatic coccidiosis infection in rabbits on tissue levels of vitamins A and E.—J. Nutr. 71, 322–326. [Author's summary modified.] 3872

Average vitamin E levels in liver and skeletal muscle of young rabbits with hepatic coccidiosis were lower than in non-infected animals.

Low vitamin E reserves were found in the liver of infected animals even if no gross liver lesions or oocysts of *Eimeria stiedae* were present. The practical significance of this finding is discussed.

Vitamin A reserves in liver were always low in infected rabbits with extensive liver damage.

Tsunoda, K. (1960). [Antagonism between *Eimeria tenella* and some caecal parasites of fowls.]—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 81–97. [In Japanese. Summary in English.] 3873

In 76 fowls blackhead developed when *E. tenella* was given 3–5 days after infection with *Histomonas meleagridis*, but coccidiosis developed when *E. tenella* was given at the same time as or within 2–4 days of *H. meleagridis*. Of 42 fowls given *E. tenella* between one day before and 10 days after infection with *Trichomonas gallinarum*, 41 developed coccidiosis with inhibition of the trichomonas infection. All of 30 fowls given *E. tenella* between one day before and 18 days after infection with *Heterakis gallinae* developed coccidiosis. Most of the nematodes died and the survivors were stunted. *Blastocystis* infection did not interfere with and was inhibited by the development of coccidiosis.

—M.G.G.

Joyner, L. P. & Davies, S. F. M. (1960). Detection and assessment of sublethal infections of *Eimeria tenella* and *Eimeria necatrix*.—Exp. Parasit. 9, 243–249. [Authors' summary modified.] 3874

Estimation of the packed red-cell volume by the micro-haemocrit technique was suitable for measuring anaemia in infected fowls. The haemocrit was a more sensitive measure of the effects of *E. tenella* infection than the growth rate. With *E. necatrix*, growth was retarded in birds which had only mild anaemia.

McLoughlin, D. K. & Wehr, E. E. (1960). Stages in the life cycle of *Eimeria tenella* affected by nicarbazin.—Poult. Sci. 39, 534–538. 3875

130 experimentally infected chicks were fed mash containing 0·0125% nicarbazin starting at the time of infection or within 144 hours afterwards. The life-cycle of the coccidium was studied by histological examination of the caeca. It was concluded that the drug was most active against second-generation schizonts. It temporarily suppressed the life-cycle. When administration of the drug ceased, the life-cycle returned to normal after a delay of 48–72 hours.—R.M.

Petrović, Z., Gološin, R. & Cvetković, A. (1958). [An outbreak of *Babesia divergens* infection in cattle north of the Danube in Yugoslavia.]—Acta vet., Belgrade 8, No. 1 pp. 30–35. [In Serbian. Summary in French.] 3876

Agents of bovine piroplasmosis in Yugoslavia are *Babesia bigemina*, *B. bovis*, *B. divergens* and *Theileria dispar*. *B. bigemina* and *B. bovis* infections, transmitted by *Boophilus calcaratus* and *Rhipicephalus bursa*, occur only in Macedonia, Kosmet, Montenegro and along the Dalmatian coast. *B. divergens* infection, transmitted by *Ixodes ricinus*, is found nearly everywhere in Yugoslavia, whereas *Theileria dispar*, transmitted by *Hyalomma detritum*, is confined to Macedonia. Details are given of the clinical picture and acarprin treatment of *B. divergens* infection in Vojvodina, north-eastern Yugoslavia, and of research at the veterinary faculty in Belgrade.—E.G.

Franklin, T. E., Bailey, C. F., Lichnovsky, J. F., Martin, W. M., Huff, J. W., Roberts, R. H. & Heck, F. C. (1960). Natural transmission, insect studies, and anaplasmosis testing in the Gulf Coast area of Texas 1958-

59.—Sthwest Vet. 13, 278-283. [Authors' summary modified.] 3877

Testing cattle on one large ranch in the Gulf Coast area revealed a high percentage of reactors to the anaplasmosis complement-fixation test in various age groups. The numbers of reactors were greatest in cattle upwards of 2 years of age.

Simić, Č., Petrović, Z., Bordički, A. & Tomanović, B. (1959). [Studies on the virulence of *T. gondii*. II. Intraperitoneal infection in mice. III. Oral infection in mice.] —Acta vet., Belgrade 9, No. 4 pp. 3-7 & 51-56. [In Serbian. Summary in French.] 3878

All of 21 mice injected i/p with 25-5,000,000 parasites of strain RH of *Toxoplasma gondii*, died within 5-10 days. The parasites were demonstrated microscopically in peritoneal fluid, spleen, liver, lungs and

brain. A batch of 22 mice, injected by the same route but with a Yugoslav strain died within 7-46 days. *T. gondii* was demonstrated microscopically in the organs of 13 mice, and in 3 mice by isolation in sousliks (*Citellus citellus*). In the remaining 6 demonstration of the parasite failed.

Oral doses of 650,000 parasites of strain RH were given to 21 mice, 15 of which died within 7-19 days. With the exception of 3 mice, *T. gondii* was present in nearly all organs. In the remainder demonstration failed. Similar doses of the Yugoslav strain were given to 42 mice, 28 of which died within 5-91 days. Doses of 1,300,000 killed 36 of 45 mice within 6-162 days. It was concluded that the Yugoslav strain was less virulent and that the number of parasites injected, irrespective of which strain, was of no great importance.—E.G.

*See also absts. 4103 (report, West of Scotland Agricultural College); 4105 (report, North Borneo); 4112 (parasitic diseases of livestock).*

#### DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Schjerning-Thiesen, K. (1960). Complement fixation reaction of foot and mouth disease. I. The importance of the amount of antigen. II. The dependence between immune serum and complement and between antigen and complement.—Acta vet. scand. 1, 294-299 & 300-304. [In English. Summaries in German and Danish. Author's summary modified.] 3879

With a constant amount of immune serum, maximum specific fixation is only seen with an optimum amount of antigen. Therefore in exact determinations, such as type differentiation, the amount of antigen must be determined in each separate case. A linear relation exists between amounts of immune serum and the corresponding optimum amounts of antigen, and also between immune serum and complement and between antigen and complement. This is of importance where the complement-fixation reaction needs to be applied with the greatest possible accuracy (type differentiations, antigen titrations).

Graves, J. H. (1960). The differentiation of subtypes (variants) of foot-and-mouth disease virus by serological methods. I. Complement-fixation test. II. Precipitin test in agar gel.—Amer. J. vet. Res. 21, 687-690 & 691-693. [Interlingua summary.] 3880

An account of methods used at the Pirbright laboratory.—R.M.

Stone, S. S. & DeLay, P. D. (1960). Serum and colostral antibody levels in cattle convalescent from foot-and-mouth disease: tests in calves and fetal tissue.—J. Immunol. 84, 458-462. 3881

Two heifers were inoculated with F. & M. disease virus late in pregnancy. One calved 12 days after inoculation and both heifer and calf died 3 days later. The other calved 18 days after inoculation but the calf was still-born; its milk had a higher content of neutralizing antibody after calving than a week after infection (11 days before calving). The whey gave positive complement-fixation tests at calving but became negative 10 days later; c.f. titres of serum remained high until the end of observations 12 days after calving. Neutralizing antibodies in whey did not decline as rapidly as c.f. antibodies. The agar gel double diffusion test on whey or colostrum was positive at calving but became negative 9 days later. The virus was not recovered from the two calves: meconium, spleen, pancreas, heart muscle and placenta were tested.—R.M.

Graves, J. H. & Poppensiek, G. C. (1960). Determination of the optimal age range of mice for use in experimental studies with foot-and-mouth disease virus.—Amer. J. vet. Res. 21, 694-696. [Authors' summary modified.] 3882

Mice 5 to 14 days of age were found to

be equally susceptible to the virus. Resistance to the lethal effect of the virus increased rapidly after the 16th day.

Campbell, C. H. (1960). Transfer of immunity to foot-and-mouth disease virus from maternal mice to offspring.—Amer. J. vet. Res. 21, 697-700. [Author's summary modified.] 3883

Pregnant mice were inoculated with F. & M. disease virus about 12 days before parturition. At birth, the offspring of immune mothers were placed with control mothers, and the offspring of control mothers were placed with immune mothers. Challenge of offspring 5 to 7 days old, with dilution of the virus showed that humoral immunity was transferred in the uterus and through milk from immune mother mice to their offspring or to those they suckled.

Schmidt, U. (1960). Über Versuche zur Vakzinierung von Rindern mit eiadaptiertem lebendem MKS-Virus. [Immunization of cattle with egg-adapted live foot and mouth disease virus.]—Arch. exp. VetMed. 14, 568-575. 3884

Type O<sub>2</sub> virus passed 62 times in eggs was no longer pathogenic for cattle, although it remained fully virulent for pigs. Fifteen cattle were each inoculated into tongue, muzzle and brisket with 100 ml. of a 1:10 dilution of infected egg from the 62nd-80th passages. All except one resisted challenge a fortnight later.—R.M.

Hecke, F. & Lorenz, R. (1960). Bedingungen und Grenzen statistisch gesicherter Aussagen bei der Immunitätsprüfung von Maul- und Klaunseuche-Vakzinen mittels Tuchinfektion. [Testing the immunizing capacity of foot and mouth disease vaccines: reliability of the method of challenge by swabbing the tongue.]—Mh. Tierheilk. 12, 199-209 & 229-242. 3885

From the results of large-scale tests at Federal research institute for virus diseases at Tübingen, it was found that although 30% of immunized, challenged cattle developed primary vesicles, only 5% contracted generalized infection. Therefore the rule that generalization can be excluded if no animal shows primary vesicles is too strict, and an error of 5% must be allowed. The most satisfactory number of cattle for testing a vaccine was 5, although 3 or 4 were sufficient to detect a poor vaccine; the use of more than 5 cattle did not yield correspondingly more reliable results. It was recommended that when

testing a vaccine on such a scale no attempt should be made to assess its efficiency: the object of the test was to detect poor vaccines. At the 5% limit of error no conclusion could be reached if 2 out of five cattle developed a fever of 40°C. after challenge.—R.M.

Voinov, S. I. & Lutsevich, F. F. (1959). [Tests on deer of experimental foot and mouth disease vaccines prepared from local "deer" strains of the virus.] — Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 80-83. [In Russian.] 3886

Inoculation of 46,000 deer with bovine vaccine had yielded unsatisfactory results and experiments showed that only half the inoculated animals resisted challenge 23 days after inoculation. Three batches of vaccine were prepared from virus isolated from deer, passaged once in cattle: this protected at least 78% of deer. [Although the word 'deer' is used throughout this article, the work was probably done on reindeer.]—R.M.

Martin, W. B. (1960). The tissue-culture colour test for titrating virus and assaying antibody in foot-and-mouth disease.—Bull. Off. int. Epiz. 53, 766-773. [In English. In French pp. 774-780.] [Author's summary modified.] 3887

The simplicity and economy of the phenol red test was improved at the Pirbright laboratory by using polyvinyl chloride plates and automatic syringes. Using pig kidney cells, a high degree of precision and sensitivity was obtained.

The monolayer from one Roux bottle provided sufficient cells for tests on 12 sera using two cups for each twofold dilution. The time involved in setting up the test can be reduced to one hour for 50 sera and little experience is needed to read the test.

Antibody titres obtained gave good correlation with the clinical reaction of vaccinated cattle to challenge. [See also V.B. 30, 1772.]

Likhachev, N. V., Bazylev, P. M. & Syurin, V. N. (1959). [Prolonged survival of dried foot and mouth disease virus adsorbed on bacteria.] — Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 51-52. [In Russian.] 3888

Adsorption of the virus onto *Chromobact. prodigiosum* cells has been reported previously [V.B. 27, 2055]. The authors now state that the freeze dried adsorbed virus retained its virulence for at least 6 years 4 months when stored at 6° to 8°C.—R.M.

Kazanskii, I. I., Karneeva, V. E. & Deryabina, Z. I. (1960). [Gamma globulins for prophylaxis and treatment in foot and mouth disease and Aujeszky's disease.] — Veterinariya, Moscow No. 7 pp. 35-39. [In Russian.] 3889

Gamma globulins prepared from hyperimmune serum against Aujeszky's disease and from convalescent serum against F. & M. disease by precipitation with ammonium sulphate or sodium chloride were more effective than the sera themselves. Of 178 baby pigs given 0·4 g. s/c per kg. body wt. against Aujeszky's disease, 92% were protected in sties suspected to be infected and 76% in heavily infected sties. But piglets with sick dams and piglets already showing symptoms were poorly protected. In unweaned piglets given 0·2-0·4 g./kg. of gamma globulins against F. & M. disease on 2 infected farms, only one out of 120 piglets with healthy dams died from the disease compared with 42% of 235 piglets with sick dams. Gamma globulins remained potent for 3½ months in cold storage and for at least 16 months when freeze-dried.—M.G.G.

Ercegovac, D., Trumić, P., Lapčević, E. & Cirić, A. V. (1958). [An outbreak of Aujeszky's disease among cats.] — Acta vet., Belgrade 8, No. 3 pp. 25-34. [In Serbian. Summaries in English and German.] 3890

During 1956-57, several cats in Belgrade became infected, probably from ingestion of infected pig viscera. Experimentally it was possible to infect laboratory rodents and cats by the skin and oral mucosa, but infection by oral administration of virus was rare. Pruritus occurred at the site of experimental infection. Dilatation of the pupil was observed in the eye nearest to the site of infection. Bilateral dilatation following unilateral dilatation was indicative of imminent death. In experimentally infected cats the number of leucocytes doubled during the incubation period and continued to increase in the course of the disease. Similarly, sugar content of blood and cerebrospinal fluid began to increase during the incubation period and became highest during the clinical stages, c.s.f. always having the higher sugar content.—E.G.

Jenkins, M. & Wamberg, K. (1960). Rabies discovered in Greenland. — J. Amer. vet. med. Ass. 137, 183-185. [Authors' summary modified.] 3891

Rabies, not previously reported from Greenland, was confirmed in 2 dogs and 2 foxes. Human rabies has never been reported.

The Greenland Health Department had formerly recognized a disease among dogs and foxes which they called "fits". Since 1906, periodic studies had been made of this condition, and it was not thought to be rabies. During the early part of 1959 this disease in dogs reached epidemic proportions in some parts of Greenland.

A dog and fox, which showed clinical signs resembling fits and rabies, were found positive for rabies by the fluorescent antibody technique. Negri bodies were found in the brain of the fox, and mice inoculated with a brain suspension from the dog and fox were also positive for rabies. Later, another dog and fox were shown to have had rabies. The disease, known since 1906 as fits, proved to be rabies.

Although a rabies control scheme for Greenland has been instituted, it is unlikely that it will be effective for some time because of the large population of foxes.

Cocozza, J. & Román, J. (1960). Estudio sobre la rabia en la frontera mexicano-estadounidense. [Rabies on the U.S.-Mexican frontier.] — Bol. Ofic. sanit. pan-amer. 48, 21-32. 3892

A review of the rabies situation in the frontier zone between the U.S.A. and Mexico, with details of the incidence in human beings and different species of domestic and wild animals in the states bordering the frontier. The numbers of wild carnivores in the frontier zone are being reduced.—M.G.G.

Kaplan, M. M., Wecker, E., Forsek, Z. & Koprowski, H. (1960). An indicator plaque-forming system for demonstration of interference by non-cytocidal strains of rabies virus. — Nature, Lond. 186, 821-822. 3893

Although fixed rabies virus multiplies in chick embryo tissues, it does not damage chick-embryo cells cultured in layers one cell thick. Since rabies virus adapted to chick embryos interferes with homologous virus in animal cells, the authors investigated, and were able to demonstrate, interference of rabies virus with a superimposed infection of the cell culture with western equine encephalomyelitis virus, which is known to damage the cultured cells. Thus if the encephalomyelitis virus failed to cause plaques in the tissue culture, it could be deduced that a certain concentration of rabies virus was present.

—R.M.

Hamann, I. (1960). Untersuchungen zur Prüfung von Geflügelpockenimpfstoffen.

[Testing fowl pox vaccines.]—Berl. Münch. tierärztl. Wschr. 73, 193-195. [Summary in English.] 3894

H. described the standardization and storage of a virulent strain of fowl pox virus used for the official testing of vaccines in East Germany. Intravenous infection was a suitable method of challenging immunity; cutaneous and contact infection were not. A pigeon pox virus vaccine protected 74% of 228 fowls against this strain. Skin scarification gave slightly better immunity than wing-web puncture.—M.G.G.

Siegel, B. V. & French, S. W. (1960). Histologic study of chick embryos for death causation following chorioallantoic inoculation with canary pox virus.—Arch. ges. Virusforsch. 10, 208-214. [In English. Authors' summary modified.] 3895

The presence of a thickened chorioallantois, in which the ectoderm and mesoderm are principally involved, and the conspicuous simultaneous absence of specific embryo degenerative or hyperplastic changes suggest that the embryo dies of hypoxia resulting from impaired oxygen diffusion through the thickened membrane. The evidence supporting this hypothesis is discussed.

Tyndall, R. L. & Ludwig, E. H. (1960). Nutritional requirements for the production of poliovirus type II, Coxsackie B3, and vaccinia viruses by continuous animal cell cultures.—J. Bact. 80, 96-103. 3896

The importance of L-cystine was investigated.—R.M.

Endo, M., Kamimura, T., Aoyama, Y., Hayashida, T., Kinjo, T., Ono, Y., Kotera, S., Suzuki, K., Tajima, Y. & Ando, K. (1960). Étude du virus B au Japon. I. Recherche des anticorps neutralisant le virus B chez les singes d'origine japonaise et les singes étrangers importés au Japon. [Virus B in Japan. I. Neutralizing antibodies in monkeys.]—Jap. J. exp. Med. 30, 227-233. [In French.] 3897

Sera from 196 monkeys from Japan and from other countries were examined and antibodies were detected in 44. The species included *Macaca fuscata*, *M. cyclopis* and *M. irus*.—R.M.

Vilček, J. (1960). Interference between tick-borne encephalitis and Western equine encephalomyelitis viruses in chick embryo tissue cultures.—Acta virologica, Prague 4, 308-

310. [In English. Author's summary modified.] 3898

The Western equine encephalomyelitis virus had no cytopathic effect on chick embryo fibroblast monolayers inoculated 72 hours previously with tick-borne encephalitis virus. This interference phenomenon which can be exploited for the quantitative assay of various tick-borne encephalitis virus strains seems to be mediated by a non-viral agent.

Hurst, E. Weston, Melvin, P. A. & Thorp, J. M. (1960). The influence of cortisone, ACTH, thyroxine and thiouracil on equine encephalomyelitis in the mouse and on its treatment with mepacrine.—J. comp. Path. 70, 361-373. [Authors' conclusions modified.] 3899

Like oestradiol and stilboestrol (and unlike testosterone and progesterone), cortisone, ACTH and thyroxine all stimulate the growth of the virus in the mouse. They abolish the tendency for more males to die than females. They tend to counteract the prophylactic effect of mepacrine against the infection. Effects of the various hormones on growth of virus differ appreciably. Thiouracil acts in a direction opposite to that of thyroxine.

Harthoorn, A. M. & Lock, J. A. (1960). A note on the prophylactic vaccination of wild animals.—Brit. vet. J. 116, 252-254. 3900

Three wild African buffaloes (*Syncerus caffer*) were immobilized by injection of suxamethonium chloride by means of a syringe shot from a rifle. The immobilized animals were inoculated with lapinized rinderpest virus. If rinderpest broke out in a nature reserve, it was estimated that a team of 4 persons could inoculate 20-30 animals a day.—R.M.

Bazylev, P. M. & Shcherbakov, G. N. (1959). [Persistence of the virulence of rinderpest virus.]—Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 68-70. [In Russian.] 3901

Freeze-dried virus remained virulent for cattle after storage at 4° to 8°C. for 2 years and 11 months.—R.M.

Borgen, H. C. (1960). Parainfluenzainfektioner hos kvaeg i Danmark? [Suspected parainfluenza in cows in Denmark.]—Medlemsbl. danske Dyrlægeforen. 43, 555-557. [In Danish.] 3902

Of 35 serum samples from healthy Danish cows from different herds, most showed specific antibodies to the Umeå (Swedish) strain of parainfluenza-3. To what

extent the virus is the cause of respiratory symptoms in cattle in Denmark is not yet known. The above tests were made in Uppsala.—F.E.W.

Dinter, Z., Hermodsson, S. & Bakos, K. (1960). Studies on variants of a bovine strain of parainfluenza 3 virus. I. Isolation and growth characteristics.—Acta path. microbiol. scand. 49, 485-492. [In English. Authors' summary modified.] 3903

A bovine strain of parainfluenza 3 virus was propagated in tissue culture of calf kidney. A stronger cytopathic effect was found in cultures inoculated with diluted virus than in those inoculated with undiluted virus. Using plaque and terminal dilution techniques, two variants were isolated from the original virus population. They differed from the original virus and from each other in cytopathogenicity. One of the variants seemed to produce significantly less haemagglutinin.

Omori, T., Ishii, S. & Matumoto, M. (1960). Miyagawanellrosis of cattle in Japan.—Amer. J. vet. Res. 21, 564-573. 3904

A summary of the authors' investigations, previously published in a series of papers, into a virus of the psittacosis-lymphogranuloma group that causes encephalomyelitis and also respiratory and intestinal syndromes in cattle.—R.M.

Traballesi, B., Quesada, A. & Izzi, R. (1959). Ricerche su di una forma di vaginitis infettiva nella vacca di probabile origine virale. [Infectious vaginitis of cows.] — Atti Soc. ital. Sci. vet. 13, 769-774. [Summaries in French and German.] 3905

An account is given of infectious vaginitis in a self-contained herd with a history of frequent returns to service during 3 months. Lesions in 5 cows are described. The bull, whose semen was normal, had slight chronic folliculitis of the penis, with some leucocytes and lymphocytes in the preputial washing. The aetiology is obscure but a virus is suspected. The disease was transmitted experimentally to cows by instillation of semen, vaginal exudate or allantoic membranes of infected embryonated eggs of 11th passage. Spontaneous recovery occurred.—T.E.G.R.

Espinosa, L. F., Herrán, M. V. & Sánchez-G. G. (1959). Estabilidad de las vacunas contra la fiebre catarral ovina (lengua azul) a la acción del calor. [Stability of bluetongue vaccines upon exposure to heat.] — Rev.

Patronato Biol. anim., Madrid 5, 275-281. 3906

Seven batches of freeze-dried vaccine were re-constituted with sterile water to make 6 different dilutions. The solutions were then kept at 37.5°C. for from 5 to 60 days. There was great variation in the loss of infectivity between each batch. An eighth batch kept at room temp. in the freeze-dried state for 8 months had a titre of  $10^{-2.26}$  compared with  $10^{-6.76}$  when just dried.—R.M.

Dunn, A. M. (1960). Louping-ill: the red deer (*Cervus elaphus*) as an alternative host of the virus in Scotland.—Brit. vet. J. 116, 284-287. 3907

Serum was obtained from 300 deer in 60 forests in Scotland. 37% of stags and 22% of hinds had a positive neutralizing index to louping-ill virus. The average index was 829, while 4 sera had one of 10,000. Most of the positive sera came from animals over 2 years old. As ticks were present in most of the areas investigated, it was suggested that deer could maintain louping-ill infection in the absence of sheep and cattle.—M.G.G.

Scott, G. R. & Heisch, R. B. (1959). Rift Valley fever and Rift Valley rodents.—E. Afr. med. J. 36, 665-672. [Authors' summary modified.] 3908

Neither the virus nor antibodies were detected in the sera of 285 rodents trapped in the Rift Valley of Kenya.

Avery, R. J., Mills, J. A. & Darcel, C. le Q. (1960). A note on serum proteins in normal and scrapie infected sheep.—Canad. J. comp. Med. 24, 241-242. [Authors' summary modified.] 3909

Serum proteins were determined by chemical analysis and by paper electrophoresis. There were no significant differences between healthy sheep and sheep infected with scrapie.

Gheorghiu, I., Albu, T. & Nițoiu, I. (1960). Conservarea proprietăților virusului pestos porcin din singe virulent defibrinat, fenolat 0.3% și tamponat la pH=5.5. [Preservation of swine fever virus in defibrinated blood containing 0.3% phenol and adjusted to pH 5.5.]—Lucr. Inst. Pasteur București 4, 193-204. [In Roumanian. Summaries in French, German and Russian.] 3910

Defibrinated swine fever blood containing 0.3% phenol and adjusted to pH 5.5 was virulent for pigs after being stored for 35 months at 4°-8°C. Vaccines prepared with

material from these infected pigs protected 29 out of 30 pigs against challenge with swine fever virus, but vaccines prepared from the same virus strain, that had undergone 16 passages in pigs during 1,050 days instead of storage, protected only 23 out of 30 pigs.

—M.G.G.

Szurman, J. & Larski, Z. (1960). Właściwości uodparniające żywego, niezjadliwego szczepu wirusa choroby cieszyńskiej. [Immunizing properties of a live, avirulent Teschen disease virus.]—Med. Wet., Warszawa 16, 325-327. [In Polish. Summaries in English, French, German and Russian.] 3911

After 11 passages on tissue culture of trypsinized pig kidney cells a strain of Teschen disease virus injected intracerebrally protected pigs against intracerebral inoculation of large doses of the virulent virus. S/c inoculation of an aluminium hydroxide adsorbed virus also proved immunogenic.—M. GITTER.

Hahnefeld, H. & Hahnefeld, E. (1960). Plaquebildung durch das Virus der ansteckenden Schweinelähmung (Teschener Krankheit) auf Ferkelnierengewebekulturen. [Plaque formation by the virus of Teschen disease in cultures of pig kidney.] — Arch. exp. VetMed. 14, 557-567. 3912

Plaques appeared in single-cell layers of pig kidney cells 2-3 days after inoculation of the virus and by 5 days they reached a size of 10 mm. diam. or more. The number of plaques was proportional to the concentration of virus.—R.M.

Brown, F. & Stewart, D. L. (1960). Infective ribonucleic acid from the viruses of Talfan and Teschen diseases.—Nature, Lond. 187, 714-715. 3913

Ribonucleic acid was prepared by the method used for other virus. The properties of the two acids were identical and were similar to those of ribonucleic acid from foot and mouth disease virus.—R.M.

Young, G. A. & Underdahl, N. R. (1960). Certification of swine herds as virus pneumonia-free.—J. Amer. vet. med. Ass. 137, 186-189. [Authors' summary modified.] 3914

Lungs from 700 slaughtered pigs, representing a population of 3,500, were examined for virus pneumonia (VP) and tissues from 500 lungs were examined histologically. In general, agreement between gross and microscopical diagnosis of VP was satisfactory, but since other respiratory diseases may be confused with VP, portions of gross lesions

should be sent to a lab. for differential diagnosis.

To determine freedom from VP it was recommended that lungs from 10 pigs in each herd should be examined, regardless of size of herd.

Bodingbauer, J. (1960). Retention of teeth in dogs as a sequel to distemper infection.—Vet. Rec. 72, 636-637 & 638. 3915

B. summarized his previous work (published in German between 1944 and 1955) and described 6 additional cases of enamel hypoplasia and retention of temporary teeth following distemper during puppyhood.—R.M.

Goret, P., Pilet, C., Girard, M. & Camara, T. (1960). Apparition et durée de l'immunité contre la maladie de Carré conférée au furet par le virus lapinisé de la peste bovine. [Immunity to distemper virus in ferrets inoculated with larinized rinderpest virus.]—Ann. Inst. Pasteur 98, 610-612. [Summary in English.] 3916

61 ferrets were inoculated i/m with rinderpest virus and challenged s/c with 1,000 m.i.d. of distemper virus between one day and 11½ months later. All ferrets challenged after 1-4 days died, and 19 out of 24 of those challenged after 5-10 days, but all ferrets challenged from the 11th day survived.

—M.G.G.

Hirato, K., Shimoizu, Y., Kunishige, T., Yoshida, K., Tanaka, S., Tokui, T., Mifune, Y. & Ono, T. (1960). Immunological studies on the infectious canine hepatitis virus. I. Complement fixing antigen.—Zbl. VetMed. 7, 525-533. [In English. Summaries in French, German and Spanish. Authors' summary modified.] 3917

The complement-fixing activities of ultracentrifuged fractions of the virus from various sources were studied. Infected dog liver suspension and dog kidney tissue culture served as good materials for preparing c.f. antigen. The tissue culture fluids (soluble and viral antigens) are recommended as c.f. antigen for routine use.

Mallucci, L. & Mantovani, A. (1959). Attività transaminasiche del plasma nella epatite sperimentale da Rubarth. [Transaminase activity in experimental canine virus hepatitis.]—Atti Soc. Ital. Sci. vet. 13, 729-731. [Summaries in English and French.] 3918

There was an increase in both aspartic-

and alanine-ketoglutaric transaminase in plasma of experimentally infected dogs.

—T.E.G.R.

Goret, P., Brion, A., Fontaine, M., Fontaine, M. (Mme), Pilet, C., Girard, M. & Girard, M. (Mme). (1959). Nouvelles recherches expérimentales sur le virus de la rhino-amygdalite contagieuse du chien. I. Pouvoir pathogène expérimental. II. Pouvoir antigène et immunogène. [Studies on the virus of contagious rhino-tonsillitis of dogs. I. Pathogenicity. II. Antigenic and immunogenic properties.]—Bull. Acad. vét. Fr. 32, 625-634 & 635-648. 3919

Rhino-tonsillitis is a highly fatal virus disease of dogs, first described in France in 1957 [V.B. 28, 133]. The authors described experimental transmission to dogs and foxes. Attempts to infect ferrets, cats, rabbits, mice and g.pigs failed.

Some persons involved in the spraying of infective material into the nose and mouth of dogs themselves developed severe laryngitis and nasal catarrh, and complement-fixing antibodies to the virus were detected in their sera.

Infected dogs were negative to c.f. tests for distemper and virus hepatitis, but positive to c.f. tests with antigen prepared by successive freezing and thawing of infected tissues. Cultivation of the virus in eggs or in cell cultures had not yet succeeded. The effect of up to four successive inoculations of a small dose of infective material was studied in 8 dogs aged 1-2 years. The second inoculation, about 2 months after the first, led to a violent reaction in 4 of the dogs. Two that did not react so violently did not respond at all to the 4th inoculation, 4 months after the first. Intradermal testing using 0·25 ml. of a 1:20 suspension of affected tonsils elicited an allergic reaction in 9 dogs that had recovered from infection.

There was no antigenic or immunological relationship with the viruses of distemper and hepatitis: dogs immunized against distemper were susceptible to rhino-tonsillitis.—R.M.

Yerasimides, T. G. (1960). Isolation of a new strain of feline pneumonitis virus from a domestic cat.—J. infect. Dis. 106, 290-296. 3920

An agent named Strain III-18 was isolated from the eyes and ocular discharge of a young cat, in Philadelphia, with acute catarrhal conjunctivitis. It had the morphological, developmental and antigenic properties of the pssittacosis-lymphogranuloma group of

viruses. It caused conjunctivitis accompanied by the formation of neutralizing antibodies in the serum of a kitten. There were close similarities with the pneumonitis virus described by Baker, but antiserum against Baker's strain did not neutralize Strain III-18.

—R.M.

I. Bittle, J. L., York, C. J., Newberne, J. W. & Martin, M. (1960). Serologic relationship of new feline cytopathogenic viruses.—Amer. J. vet. Res. 21, 547-550. 3921

II. Crandell, R. A. & Madin, S. H. (1960). Experimental studies on a new feline virus.—Ibid. 551-556. 3922

I. Attempts to isolate viruses from cats in Indiana were made by inoculating cultures of kitten kidney cells with nose and eye swabs. No cytopathic agents were detected in swabs from 50 apparently healthy cats, but 17 strains were isolated from cats with rhinitis and conjunctivitis. Neutralization tests with 12 of the strains and 11 strains supplied by others indicated that they could be divided into 2 groups. The 15 strains of group 1 appeared to be serologically unrelated, although some gave mild cross-reactions with antisera of other strains; their role in cat diseases has yet to be investigated. The second group of 7 strains were antigenically identical to Strain C-27 isolated by Crandell & Maurer [V.B. 28, 2865].

II. A cytopathic agent was isolated in California by inoculating cultures of kitten kidney cells with blood and throat swabs from a kitten with an acute non-fatal respiratory syndrome, not accompanied by sneezing or coughing. Sera from 3 of 16 apparently healthy kittens inhibited the virus. Infection was experimentally transmitted to 9 cats. The agent was apparently unrelated to the viruses of feline pneumonitis, panleuconenia, rhinotracheitis, and that described by Fastier [V.B. 28, 2698].—R.M.

Gledhill, A. W. & Rees, R. J. W. (1960). Effect of a primary tuberculous infection on the resistance of male and female mice to ectromelia.—Nature, Lond. 187, 703-704. 3923

209 mice were inoculated i/v with virulent tubercle bacilli. Three weeks later they were inoculated i/p with ectromelia virus. 30% of male mice survived ectromelia compared with only 9% of healthy male mice. Female mice were more resistant to ectromelia than males and TB. had little effect on the proportion surviving.—R.M.

Bankowski, R. A. & Corstvet, R. (1960). **Immunity and the reproductive tract of laying hens vaccinated with the tissue culture Newcastle disease virus.** — Amer. J. vet. Res. 21, 610-617. [Authors' summary modified.] 3924

Two doses of tissue culture-modified Newcastle disease virus (TCND), administered eight weeks apart to a flock of 28,000 chickens, protected the layers for at least 101 weeks; no decrease in egg production occurred and there were no signs of the disease after exposure by contact or by i/m inj. of virulent N.D. virus. No spread of TCND between the vaccinated birds and unvaccinated pen contact controls was evident during 19 months.

A flock of 3,500 chickens with signs of delayed reaction to infectious bronchitis vaccination were inoculated with TCND without aggravation of clinical signs.

In chickens inoculated with two doses of crystal violet-inactivated vaccine and then exposed by contact when 76 weeks of age no signs of Newcastle disease occurred, but egg production decreased.

The systems and relationships involved in a satisfactory and practical immunity to Newcastle disease in laying hens were discussed.

Majewska, H. (1960). Próby uzyskania niekompletnych cząsteczek wirusa rzekomego pomoru drobiu, szczepu Vi, drogą utleniania receptorów komórkowych. [Incomplete Newcastle disease virus particles obtained by oxidation of viral substrates.] — Med. Wet., Warszawa 16, 404-406. [In Polish. Summaries in English, French, German and Russian.] 3925

Non-infective particles of the Vi strain were produced when large inoculum and potassium periodate, as the oxidizer, were used but no incomplete virus particles were obtained when sodium periodate was used as the oxidizer.—M. GITTER.

Bankowski, R. A., Corstvet, R. E. & Clark, G. T. (1960). Isolation of an unidentified agent from the respiratory tract of chickens. — Science 132, 292-293. [Authors' abst. modified.] 3926

A relatively stable filtrable virus, not previously described, which agglutinated r.b.c. of chickens, was isolated from the trachea of birds in an unusually severe outbreak of infectious laryngotracheitis, which concealed the infection caused by the new agent. The

agent by itself caused mild and transient illness in susceptible chickens. It may belong to the myxovirus group.

Cvjetanović, V. (1960). Zapažanja o psitakozi kod kokošiju. Osrv na sanitarno značenje ornitoze peradi. [Psittacosis in fowls in Yugoslavia. Public Health aspects.] — Vet. Glasn. 14, 427-434. [In Croat. Summary in English.] 3927

Psittacosis was diagnosed in 9 flocks in the Sarajevo area. Generally the mortality was low but in one flock of 1,060 it amounted to 370 within four months. Details were given of virus characteristics, P.M. appearance, oxytetracycline therapy and human infection in Yugoslavia.—E.G.

Stewart, R. B. (1960). Effect of cortisone on the growth of psittacosis virus in cultures of L cells. — J. Bact. 80, 25-29. [Author's summary modified.] 3928

Cortisone had two effects on the virus-cell system: (1) suppression of virus release from the cell; (2) protection of the cells against virus cytopathic action (resulting in higher titres of virus than those found in control cultures).

Mason, E. J. & Kaufman, N. (1960). The toxic properties of massive inocula of Newcastle disease virus and influenza virus (PR8) for cell strains derived from normal and neoplastic tissue. — Amer. J. Path. 37, 231-243. 3929

Cultured cells were damaged only when inoculated with a concentration of virus exceeding one egg-infectious dose per cell. Although the damage was caused by the virus, it was not due to multiplication of virus within the cell because the toxic effect of inocula could not be serially passaged indefinitely.

—R.M.

Brunner, K. T., Hurez, D., McCluskey, R. T. & Benacerraf, B. (1960). Blood clearance of  $P_{32}$ -labeled vesicular stomatitis and Newcastle disease viruses by the reticuloendothelial system in mice. — J. Immunol. 85, 99-105. [Authors' summary modified.] 3930

Vesicular stomatitis virus (VSV) and Newcastle disease virus (NDV) were grown within media containing radiophosphorus.  $P_{32}$ -labelled VSV was purified by ammonium sulphate precipitation and differential centrifugation, and NDV by the adsorption-elution technique with erythrocytes. Both virus preparations were cleared from the blood by the reticulo-endothelial cells of the liver when

injected intravenously. In the case of NDV, it was observed that previous blockade with Thorotrast slowed the rate of clearance of the virus, whereas treatment with specific anti-serum increased it.

Bucca, M. A., Casey, H. L. & Winn, J. F. (1960). Method of concentration of viral diagnostic reagents using hydrophilic agents.—Proc. Soc. exp. Biol., N.Y. 104, 247-250. 3931

The authors adapted a method described by Kohn [Nature 183, 1055 (1959)] who used polyvinylpyrrolidone and polyethylene glycol as hydrophilic agents. They concentrated antigens prepared from four human viruses.

—R.M.

Heisch, R. B. (1960). The isolation of *Rickettsia burneti* from *Lemniscomys* sp. in

See also absts. 4103 (report, West of Scotland Agricultural College); 4104 (report, Western Australia); 4105 (report, North Borneo); 4106 (report, South Holland); 4110 (book, bacteriophages).

## IMMUNITY

Kolesov, S. G. [Edited by.] (1959). [Biological preparations, viruses, microbes. Vol. VIII.] pp. 232. Moscow: Gosud. nauchno-kontrol'nyi Institut veterinarnykh Preparatov. 12r. [Trudy nauchno-kontrol. Inst. vet. Preparatov 8,] [In Russian.] 3934

This collection of 40 papers (not published elsewhere) on a wide variety of subjects comes from the State Control Institute for Veterinary Preparations in Moscow. Important papers will be abstracted individually. The emphasis is on tuberculin (5 papers), and foot and mouth disease (5); there are 9 papers on bacterial vaccines and immune sera and 6 on chemotherapy. Other volumes in this series are 1, (1937), 2, (1947), 3, (1952), 4, (1953), 5, (1955), 6, (1956) and 7, (1957).—R.M.

Leskowitz, S. (1960). Studies in immunization. II. Immunization with specific precipitates.—J. Immunol. 85, 56-66. [Author's summary modified.] 3935

Rabbits immunized with bovine serum albumin (BSA) or rabbit anti-BSA specific precipitates combined with Freund's complete adjuvant produced circulating antibody and

See also absts. 3792-3794 (TB); 3798-3800 (swine erysipelas); 3812 (somatic antigen of E. coli); 3819-3824 (pullorum disease); 3831 (brucellosis); 3837-3846 (leptospirosis); 3849-3850 (clostridial infections); 3851 (tetanus antitoxin); 3854 (simultaneous vaccination of sheep against brucellosis and paratryphoid); 3855 (mixed blackleg, malignant oedema and pasteurellosis's vaccine for cattle); 3892 (contagious bovine pleuropneumonia); 3867 (Trypanocoma equiperfum antigens); 3879-3889 (F. & M. disease); 3893 (rabies); 3894 (fowl pox); 3897 (virus B); 3900 (rinderpest vaccination in wild buffaloes by syringe fired from shotgun); 3906 (bluetongue vaccine); 3911-3912 (Teschien disease); 3916 (cross immunity between rind crest and distemper); 3917 (hepatitis, canine virus); 3919 (contagious rhinotonsillitis in dogs); 3924-3925 (Newcastle disease); 3961-3964 (lungworms); 3974 (serological diagnosis of bovine setarasis); 4109 (book, brucellosis).

Kenya.—E. Afr. med. J. 37, 104. 3932

Of nine mice (*L. striatus*), one yielded *R. burneti*, and c.f. antibodies against the organism were demonstrated in six.—M.G.G.

Soběslavský, O. & Syrucek, L. (1959). Trans-ovular transmission of *C. burneti* in the domestic fowl (*Gallus gallus domesticus*).—J. Hyg. Epidemiol. Microbiol. Immunol. 3, 458-464. [In English. Abst. from Trop. Dis. Bull. 57, 697 (1960).] 3933

*Rickettsia burneti* was given orally to 8 hens. It was recovered from 14 out of 36 suspensions of pooled yolk sacs and from 3 of 14 chicks obtained from eggs laid between 26 and 64 days later; from the spleen of a hen negative to the c.f. test a year after infection; and from the eggs and ovaries of the progeny of these hens.—M.G.G.

had delayed hypersensitivity to the BSA portion of the complex.

Rabbits immunized with specific precipitates given intravenously produced antibody to the BSA portion when the complex was formed at equivalence but not when the complex was formed in antibody excess.

An additional antibody produced by some rabbits was shown to be directed towards the rabbit  $\gamma$ -globulin portion of the complex.

No antibody was found which could be considered specific for the particular complex used for immunization.

Rowell, H. C., Downie, H. G., Mustard, J. F., Leeson, J. E. & Archibald, J. A. (1960). A disorder resembling hemophilia B (Christmas disease) in dogs.—J. Amer. vet. med. Ass. 137, 247-250. [Authors' summary modified.] 3936

A disease in Cairn Terriers was characterized by defective blood coagulation due to a serum factor that affects thromboplastin formation. It appears to be inherited as a sex-linked recessive, and was found only in males. Bleeding in affected dogs may be treated by the administration of blood plasma or serum from normal dogs.

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

McCarthy, D. H. (1960). Observations on the infestation of animal species in Central Queensland by the stickfast flea (*Echidnophaga gallinacea*). — Aust. vet. J. 36, 200-201.

3937

The occurrence of *E. gallinacea* on a pet wild pig, tamed white cockatoos and galahs, turkeys and guinea-fowls is reported. Predilection site on pig and kangaroo was inside ears, and on cockatoos and galahs around eyes. Some of the factors which influenced the severity of infestation of these various hosts are discussed.—M. D. MURRAY.

Beesley, W. N. (1960). Persistence of insecticide in fleece. — Vet. Rec. 72, 638-640. [Author's summary modified.]

3938

Wool from Welsh Mountain sheep which were dipped in a BHC-Dieldrin emulsion contained insecticidal material up to 3 years later. Presence of insecticide was demonstrated by failure to develop of *Lucilia sericata* larvae implanted into the wool of treated sheep. Laboratory blowfly cultures which incorporated wool clippings were also affected: the effect in culture of wool taken at progressively later dates was at first to kill the young larvae and later to inhibit development of the adults in their puparia. Eventually, flies emerged which appeared normal but were unable to oviposit or laid infertile eggs; finally, completely normal flies emerged.

Cluett, M. L., Lowen, W. K., Pease, H. L. & Woodhouse, C. A. (1960). Determination of methoxychlor and/or metabolites in milk following topical application to dairy cows. — J. agric. Food Chem. 8, 277-281.

3939

No residues were detected in the milk of 4 cows each dusted with 10 g. of 50% methoxychlor powder. Up to 0·1 p.p.m. of methoxychlor was found in milk on the first day after spraying with aqueous preparations at the recommended dosage, falling to 0·02 p.p.m. on the 7th day. Repeated application at intervals of 3 weeks did not increase the concentrations in the milk. Organic chlorine compounds other than methoxychlor were not detected.—M.G.G.

Davies, H. & Blasdale, P. (1960). The eradication of *Glossina morsitans submorsitans* Newst. and *Glossina tachinoides* Westw. in part of a river flood plain in Northern Nigeria by chemical means. Part III. — Bull. ent. Res. 51, 265-270. [Authors' summary modified.]

3940

An account is given of work carried out during the third year to eradicate tsetse flies from an elongated fly-belt situated in the Sudan savannah vegetational zone of Northern Nigeria, which is an important cattle-raising area.

The fly-belt is about 120 miles long and in places 10 miles wide and forms the flood plains and adjacent uplands of the Komaduga Gana river.

Sixty-nine sq. miles were sprayed with DDT in the dry season (end of January to end of April 1958), and 18 months later no tsetse have been found in the treated area. These 69 sq. miles formed the dry-season habitat of the fly on this section of the river, and the cost of insecticide and labour was about £86 per sq. mile. As the zone infested in the wet season greatly exceeded this dry-season concentration area, reclamation costs per sq. mile, when applied to the amount of grazing land made safe for cattle, amounted to much less than the figure quoted.

Roulston, W. J. & Schuntner, C. A. (1960). Sulphydryl content of the embryos of the Australian cattle tick. — Nature, Lond. 186, 1069-1070.

3941

Eggs laid over a period of 4 days by 2 strains of *Boophilus microplus*, one susceptible to arsenic and the other 10·7 times more resistant, were incubated at 30°C. Their sulphhydryl content was determined daily until hatching. During the first 9 days the sulphhydryl content of the resistant embryos was significantly lower than that of the susceptible embryos and at no time was it higher than that of the susceptible embryos. This did not correspond with the findings in *B. decoloratus* [V.B. 28, 2529].—M.G.G.

Whitehead, G. B. & Baker, J. A. F. (1960). Toxaphene resistance in the red tick, *Rhipicephalus evertsi*, Neumann in South Africa. — Vet. Rec. 72, 566.

3942

Female *Rh. evertsi* ticks were collected from cattle that were dipped weekly in a wash of 0·25% toxaphene. 40% of the ticks laid viable eggs in the presence of 1% toxaphene, and only 6% of the larvae were killed by 5·12% toxaphene. Concomitant tolerance of BHC and dieldrin was noted.—M.G.G.

Foggie, A. & Allison, C. J. (1960). A note on the occurrence of tick-borne fever in cattle in Scotland with comparative studies of

**bovine and ovine strains of the organism.**—  
Vet. Rec. 72, 767-770. [Authors' summary modified.] 3943

Tick-borne fever was diagnosed in a dairy cow. The geographical location suggested that the disease in cattle was caused by an ox-adapted strain of the organism. Infectivity and cross-immunity experiments are described which show that there are considerable differences between ovine and bovine strains.

—. (1960). **Psorergates ovis—the itch mite of sheep.**—Aust. vet. J. 36, 317-321. 3944

This statement of factual information on itch mite, prepared by a specially appointed Technical Committee of the Australian Veterinary Association, is presented under the following headings:—diagnosis, life cycle and bionomics, distribution, economic importance, methods of treatment, insecticides,

See also absts. 3876 (vectors of bovine piroplasmosis); 3877 (insect studies in anaplasmosis); 4103 (report, West of Scotland Agricultural College); 4104 (report, Western Australia); 4106 (report, South Holland); 4112 (book, parasitic diseases of livestock).

#### PARASITES IN RELATION TO DISEASE [HELMINTHS]

Demidov, N. V. & Potekhina, L. F. (1959). [Action of carbon tetrachloride and hexachloroethane on immature liver flukes.]—Trudy vsesoyuz. Inst. Gel'mint. 6, 206-211. [In Russian. Summary in English.] 3946

19 sheep were each infected with 200 cercariae. The first group of 4 sheep (plus two untreated controls) were treated with 2 ml.  $CCl_4$  or hexachloroethane 0·3-0·4 g./kg. body wt., given by mouth 43 days after infection. All six sheep were killed two days later: treated sheep harboured as many flukes as the controls. The second group were treated 60 days after infection, and again the drugs appeared to be ineffective. Not until 11 and 12 weeks after infection, when sexually mature flukes were present, did the drugs kill the flukes.—R.M.

Demidov, N. V. (1959). [Action of carbon tetrachloride on motor function of the gastrointestinal tract of sheep.]—Trudy vsesoyuz. Inst. Gel'mint. 6, 195-202. [In Russian. Summary in English.] 3947

Subcutaneous or intra-ruminal injection of  $CCl_4$  had no effect on contractions of the rumen. Injection into the rumen or into the duodenum caused atony of the duodenum, but s/c inj. was without this action.—R.M.

Ivanova, Z. I. & Khitenkova, L. P. (1959). [Action of hexachloroethane on secretory and motor activity of the intestine in sheep.]—

standard of control, criteria for testing of insecticides, and recommendations.

—A. CULEY.

Colglazier, M. L., Enzie, F. D. & Wilkens, E. H. (1960). Some chemotherapeutic trials in canine demodicetic mange.—Proc. helm. Soc. Wash. 27, 139-145. [Authors' summary modified.] 3945

A 2% aqueous suspension of ronnel, applied by wash at weekly or semi-weekly intervals for 3 to 8 weeks, showed promise of effective action against *Demodex canis*, but in most cases there was recurrence of lesions and mites from 3 to 13 months later. Oral doses of the chemical were ineffective, and they showed no favourable influence on the course of treatment when given concurrently with the aqueous suspension. Bayer 21/199, dimethoate, and Conteben (thiacetazone) were ineffective in limited trials.

Trudy nauchno-kontrol. Inst. vet. Preparatov 8, 216-221. [In Russian.] 3948

Chyme was collected from 2 sheep from external anastomoses of the small intestine. Intestinal contractions were measured by means of a balloon inserted through the anastomosis. The drug had no apparent action in therapeutic dosage (0·1 g./kg. body wt.) on motor activity but it increased secretory activity without affecting pH. Higher doses (0·2 and 0·4 g./kg.) reduced motor activity.—R.M.

Lienert, E. (1960). Die Wirkung von Aureomycin auf unter die Rückenhaut der weissen Ratte implantierte geschlechtsreife Exemplare von *Fasciola hepatica* L. [Effect of chlortetracycline on mature *F. hepatica*, implanted under the skin of the back in rats.]—Wien. tierärztl. Mschr. 47, 313-318. [Summaries in English, French and Italian.] 3949

All of 72 *F. hepatica* were alive 5 days after s/c implantation in the back of 11 rats given 2·9 g./kg. of chlortetracycline orally at the time of implantation. But 25% of the 546 flukes implanted s/c in most of the 82 rats given a smaller dose or no antibiotic were dead 5 days later, owing, it is stated, to bacterial action.—M.G.G.

Facey, R. V. & Marsden, P. D. (1960). *Fascioliasis in man: an outbreak in Hamp-*

shire.—Brit. med. J., August 27th, 619-625. 3950

Isolated cases of *F. hepatica* in man in the United Kingdom have been described before, but this is the first report of an outbreak. It affected at least 6 persons living in Ringwood, Hampshire, all of whom probably became infested by eating watercress.—R.M.

Tsvetaeva, N. P. (1959). [Histopathology of paramphistomum infestation in calves.]—*Helminthologia* 1, Nos. 1-4 pp. 249-255. [In Russian. Summaries in English and French.] 3951

Acute and chronic *Paramphistomum* infestation is a serious problem in some parts of the Ukraine. Up to 30,000 immature flukes have been recovered from the gastro-intestinal tract of one animal. Lesions were briefly described.—R.M.

Floyd, G. (1960). Cysticercosis and hydatid disease of cattle in Kenya.—J. Parasit. 46, 491-496. [Author's summary modified.] 3952

One thousand cattle were examined for cysts of *Cysticercus bovis* and *Echinococcus granulosus*. Tables show their incidence according to sex, age, type, and other aspects. Cysticercosis and hydatidosis did not appear to interfere with each other. Males were infested with *C. bovis* cysts more often than females but there was no sex difference in the occurrence of hydatid cysts. There was a slight decrease in incidence of cysticercosis with increased age, while the reverse was the case in *Echinococcus* infestation.

Svadzhyan, P. K., Mikaelyan, S. T. & Alakhverdyan, O. G. (1960). [Copper sulphate better than tin arsenate against *Moniezia* in sheep.]—Veterinariya, Moscow No. 7 pp. 41-42. [In Russian.] 3953

Of 340 lambs, aged 3-5 months, 84% were freed from *Moniezia* infestation by a dose of 35-45 ml. of 1% copper sulphate soln., and 79% of 330 lambs were freed from the infestation by 0.6 g. of tin arsenate. In a second trial with 1,000 lambs copper sulphate cured 78-83% of lambs and tin arsenate 65-72%.—M.G.G.

Dol'nikov, Y. Y. (1959). [Basic copper salts—hydroxycarbonate and hydroxysulphate—new anthelmintics for the control of tape-worms in sheep.]—*Helminthologia* 1, Nos. 1-4 pp. 235-238. [In Russian. Summaries in English and German.] 3954

Working at the Siberian veterinary research Institute in Omsk, D. showed that

the toxicity for sheep of cupric hydroxycarbonate ( $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ ) was the same, weight for weight, as that of copper sulphate. A hydroxysulphate and hydroxychloride were also studied but they were more toxic than  $\text{CuSO}_4$ . The hydroxycarbonate was given by mouth to 42 lambs at 30-50 mg./kg. body wt. and the hydroxysulphate was given to 18 lambs at the same dosage. Treatment eliminated infestation in 35 of the 42 and in 17 of the 18 lambs. The number of worms in any one lamb was reduced by 85-100%.

—R.M.

Enzie, F. D. & Colglazier, M. L. (1960). Tenicidal trials with some diphenyl sulfones in cats, dogs, and chickens.—Amer. J. vet. Res. 21, 624-627. [Authors' summary modified.] 3955

One of several substituted diphenyl sulphones, bis(2-hydroxy-5-chlorophenyl) sulphone, had good anthelmintic action against *Taenia taeniaeformis* in cats and, to a lesser extent, *T. pisiformis* in dogs. It was ineffective against *Raillietina cesticillus* in limited trials with chickens.

The drug was well tolerated in effective dosage, especially in cats. Emesis and soft faeces, the only signs of toxicity, occurred infrequently at doses within the optimum range, 25 to 50 mg./lb. body wt.

The relationship of chemical structure and anthelmintic action is discussed briefly.

Pande, B. P. & Rai, P. (1960). The nematode genus *Strongyloides* Grassi, 1879 in Indian livestock. I. Observations on natural infections in the donkey (*Equus asinus*).—Brit. vet. J. 116, 281-283. 3956

Two donkeys were found to be infested with *S. westeri*.—R.M.

Osborne, J. C., Batte, E. G. & Bell, R. R. (1960). The pathology following single infections of *Ostertagia ostertagi* in calves.—Cornell Vet. 50, 223-224. [Authors' summary modified.] 3957

Third-stage infective larvae of *O. ostertagi* parasitized the gastric glands of the mucosa of the abomasum immediately in *in vitro* tests.

Parasite-free calves, aged from 38 to 174 days, were infected in all attempts with a single oral dose, ranging from 7,000 to 175,000 third-stage infective larvae.

Larvae were demonstrated in the gastric glands of the fundic region of the abomasum as early as 6 hours after a single oral dose.

The histotropic phase principally involves the lumen of the gastric glands of the fundic region of the abomasum, though after heavy inoculations the pyloric region may be parasitized.

The gross features and the histology of the lesions were recorded.

Bessonov, A. S. (1959). [Development of *Ostertagia ostertagi* in sheep.]—*Helminthologia* 1, Nos. 1-4 pp. 159-161. [In Russian. Summaries in English and French. English summary modified.] **3958**

Development of *O. ostertagi* in sheep is accomplished in 33-40 days; it is longer than in cattle (22-25 days). The length of life of adult helminths in sheep is not long (20-61 days); it is much shorter than in cattle (about 234 days). B. concluded that the nematode was not specific for sheep.

Goldberg, A. & Lucker, J. T. (1960). Effects on calves of gastrointestinal nematodes naturally acquired.—*Proc. helm. Soc. Wash.* 27, 157-160. [Authors' summary modified.] **3959**

Twelve calves were used in two grazing experiments lasting 15 and 10 weeks. Half of the calves were maintained on a clean pasture and half on a pasture that had been recently contaminated with cattle manure containing nematode eggs. The calves on the contaminated pasture became moderately infected with worms, but those on the clean pasture remained almost free from worms. The calves on the clean pasture gained weight twice as well on the average as those on the contaminated one, and they were in better condition.

Taylor, A. & Whitlock, J. H. (1960). The exsheathing stimulus for infective larvae of *Haemonchus contortus*.—*Cornell Vet.* 50, 339-344. [Authors' summary modified.] **3960**

*H. contortus* third-stage larvae can be stimulated to exsheathe by various dilute saline solutions reasonably well saturated with CO<sub>2</sub>, in a shaking machine in an incubator kept at 37°C.

Carbonic acid reacts in many ways like simple organic acids, and it is not surprising that various organic acids as well as sulphurous acid will cause ecdysis by themselves in the absence of CO<sub>2</sub>, if they are used above the pH level which is lethal for the larvae (pH 3).

The non-specific acid reaction is more variable and less efficient than the carbonic acid reaction; hence the two reactions may not be exactly equivalent.

Cornwell, R. L. & Berry, J. (1960). Observations on an outbreak of parasitic bronchitis initiated by vaccinated carrier calves.—*Vet. Rec.* 72, 595-597 & 598. [Authors' summary modified.] **3961**

Five calves grazing a reseeded pasture became infected with *Dictyocaulus viviparus* following the introduction of 4 calves which had been vaccinated with irradiated larval vaccine and had subsequently grazed infected pasture on another farm. The course of the infection was studied on two paddocks by faecal counts, estimation of infective larvae on the herbage and complement-fixation tests on sera using a heated whole worm antigen. Four of the five calves died. The epidemiological significance of the results is discussed.

Wade, A. E. (1959). Studies of the immune responses elicited by the lungworm parasite *Dictyocaulus viviparus* (Bloch).—*Dissertation, Florida* pp. 173. [Abst. from Diss. Abstr. 20, 2847-2848, (1960).] **3962**

The g.pig was a suitable lab. animal for immunological studies of *D. viviparus*. The whole worm larva antigen, which appeared the most effective of those tested in lab. animals, provided some protection in calves over eight months of age. This vaccine was ineffective in calves aged 3 months and failed to protect them from the pathological changes and clinical signs produced by lungworm infection.

Panasyuk, D. I. (1959). [Clinical course and pathogenesis of *Dictyocaulus filaria* infection in sheep.]—*Trudy vsesoyuz. Inst. Gel'mint.* 6, 290-337. [In Russian. Summary in English.] **3963**

A detailed study of experimental infestation in 42 sheep and spontaneous infestation in 110 sheep. Biochemical changes in the blood are dealt with by O. I. Polyakova on pages 282-289 of the same publication.—R.M.

Ozerskaya, V. (1960). [Immunisation of sheep against *Muellerius* infestation.]—*Helminthologia* 2, No. 1 pp. 41-46. [In Russian. Summaries in English, French and German. English summary modified.] **3964**

The antigen for immunization of sheep against *Muellerius* was prepared from lung tissues of infected animals and from feet of molluscs containing infective larvae of *M. catillaris*.

The immunogenic action of the antigen and its specificity were determined by means of the formation of precipitate on live larvae of *Muellerius* in serum from immune sheep

as well as by infecting lambs with *Muellerius* and examining them afterwards for faecal larvae and for lesions.

Lambs immunized with lung tissue antigen developed a partial immunity, manifested by delayed development of the worms, their encapsulation in lung tissue and inhibition of egg laying.

The antigen from molluscs gave negative results.

Immunization of lambs grazing with adult sheep exerted a prophylactic action: at the end of the pasture season the infestation of lambs appeared to be lower than in the control group.

I. Bessonov, A. S. (1959). [Ditrazin (diethylcarbamazine) phosphate for metastrongyles in pigs.]—Trudy vsesoyuz. Inst. Gel'mint. 6, 187-190. 3965

II. Vasil'ev, A. A. (1959). [Failure of ditrazin (diethylcarbamazine) to kill lungworms in horses.]—Ibid. 191-194. 3966

III. Potemkina, V. A. & Lukashenko, N. P. (1959). [Trials with ditrazin (diethylcarbamazine) and atonin (extract of *Artemisia terra-alba*) against ascaridia in fowls.]—Ibid. 246-247. [In Russian. Summaries in English.] 3967

I. The drug was tested on 10 naturally infested pigs aged 4-6 months on one farm. One, two or three daily doses of 0·3 g./kg. body wt. reduced the faecal egg count by 85-100%. One part of the drug was dissolved in water and the sterilized soln. was given by i/m inj. into one or two sites.

II. Up to 3 daily doses of 0·1 or 0·2 g./kg. body wt. given subcutaneously failed to influence *D. arnfieldi* infestation in 5 foals aged 4-6 months.

III. Diethylcarbamazine was given in bolus form to 24 infested fowls at a single dose of 0·5 or 1 g. Seventeen were freed from *Ascaridia*. Treatment resulted in discharge of 1,456 worms, and when the birds were killed 3 days after treatment 340 worms (23% of the total) were found inside them. Extract of *Artemisia terra-alba*, followed after 2 hours by sodium sulphate purgative, also gave good results.—R.M.

Nikulin, T. (1959). [Destruction of *Ascaris lumbricoides* ova in pigsties by ultra-violet irradiation.]—Helminthologia 1, Nos. 1-4 pp. 239-242. [In Russian. Summaries in English and German.] 3968

*Ascaris* eggs were killed by 10-15 daily or twice-daily exposures to ultra-violet light

from a mercury-quartz lamp a metre away. Each exposure lasted 3, 5 or 10 min.—R.M.

Werda, K. (1960). Stosowanie pyłu tytoniowego w leczeniu glistnic kur w warunkach terenowych. [Field trials with powdered tobacco as an anthelmintic for fowls.]—Med. Wet., Warszawa 16, 419. [In Polish.] 3969

In an outbreak of *Ascaridia galli* infection in a flock of 600, tobacco powder containing 1·5% nicotine was added daily for 3 weeks to the mash at a conc. of 1:50. Marked improvement was noted in the birds' condition. Although faecal samples revealed that after 4 weeks about 10% of birds were still mildly infested the author regards the results of this treatment as satisfactory in view of the low cost and simplicity of using tobacco powder for mass dosing.—M. GITTER.

Gibson, T. E. (1960). *Toxocara canis* as a hazard to public health.—Vet. Rec. 72, 772-773 & 774. [Author's summary modified.] 3970

The role of *Toxocara canis* in the causation of visceral larva migrans in man and in the domestic animals is outlined. The danger, particularly to young children, which may result from keeping young puppies and nursing bitches as domestic pets is stressed. The measures which may be taken to reduce the hazard of *T. canis* infestation in man are given in detail.

Pike, E. H. (1960). Effect of diethylcarbamazine, oxphenarsine hydrochloride and piperazine citrate on *Toxocara canis* larvae in mice.—Exp. Parasit. 9, 223-232. 3971

Diethylcarbamazine and oxphenarsine hydrochloride were not very effective against migrating larvae, although fewer larvae were recovered from the organs than from untreated mice. Piperazine citrate was ineffective. The anthelmintics had no effect on the eosinophilia that occurs during larval migration.—R.M.

Browne, S. G. (1960). Onchocercal depigmentation.—Trans. R. Soc. trop. Med. Hyg. 54, 325-334. [Author's summary modified.] 3972

A characteristic cutaneous depigmentation in man is described, associated uniquely with prolonged exposure to *Simulium* bites and with long-standing onchocerciasis.

B. suggested that the depigmentation is an anaphylactic phenomenon due to toxins arising from onchocercal microfilariae or adult worms.

Hahn, A. W. (1960). Angiocardiography in canine dirofilariasis. II. Utilization of a rapid film change technique.—J. Amer. vet. med. Ass. 136, 355-358. 3973

Radiographic diagnosis of heartworm was assisted by a device that exposed a series of 12 X-ray plates at half-second intervals during and immediately after i/v inj. of the contrast medium. The method was tried on 14 infected dogs.—R.M.

Lukin, A. Y., Klenin, I. I., Savitskaya, A. S. & Efremova, E. L. (1960). [An immunological method for the diagnosis of setariosis in cattle.]—Helminthologia 2, 35-40. [In Russian. Summaries in English, French and German.] 3974

Antigen for an i/d allergic test was prepared by extracting dried whole worms of *S. labiatopapillosa* with a solution containing sodium and potassium phosphates and sodium chloride. A positive reaction consisted of a

hot swelling 5 cm. diam. 30-45 min. after injection. Out of 62 cattle tested 28 gave positive results. Microfilariae were seen in the blood of 8 reactors and adult worms were found at slaughter in 25. A precipitin test on blood also gave reliable results.—R.M.

Jaskoski, B. J. & Krzeminski, W. (1960). Incidence and treatment of parasites in a zoological garden.—Amer. J. vet. Res. 21, 631-635. 3975

Helminth or coccidial infestation was found in 13% of 391 mammals at two zoological gardens in Chicago. Three anthelmintics were tested. A coated preparation of hexylresorcinol given in the feed caused diarrhoea and vomiting in two pumas. Piperazine adipate was well tolerated and easy to administer; it eliminated helminths from 24 of 33 animals of 20 different species. Dithiazanine iodide eliminated helminths from 10 of 13 animals, but caused diarrhoea and vomiting in 2 bears.—R.M.

*See also abcts. 3848 (possible association of Muellerius capillaris with enterotoxaemia); 4103 (report, West of Scotland Agricultural College); 4105 (report, North Borneo); 4106 (report, South Holland); 4112 (book, parasitic diseases of livestock).*

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Palmer, A. C. & Hickman, J. (1960). Ataxia in a horse due to an angioma of the spinal cord.—Vet. Rec. 72, 611-612 & 613. [Authors' summary modified.] 3976

The clinical and pathological features in a horse affected with a venous angioma of the spinal chord are described and compared with the ataxia syndrome known as "wobbles".

Roncati, G. (1959). Su di un voluminoso fibroma in corno di bovino. [Fibroma of the horn in a bull.]—Ann. Fac. Med. vet. Pisa 12, 143-147. [Summaries in English and French.] 3977

A large fibroma developed after fracture of the horn; there was no evidence of malignancy.—T.E.G.R.

Kudláč, E. & Věžník, Z. (1959). Příspěvek k výskytu, rozpoznání a léčbě novotvarů v pochvě u krav. [Incidence, diagnosis and treatment of vaginal tumours in cows.]—Sborn. vys. Šk. zemědělsk. Brno, Ser. B 7, 419-428. [In Czech. Summaries in German and Russian.] 3978

Seven cases are described: 5 were mixed tissue neoplasms, one a soft fibroma and one a lipoblastoma. Surgical removal was carried

out in 6 cases and recovery was uneventful in 5. There was no recurrence after subsequent pregnancies.—E.G.

Anderson, D. E. (1960). Studies on bovine ocular squamous carcinoma ("cancer eye"). X. Nutritional effects.—J. Anim. Sci. 19, 790-799. [Author's summary modified.] 3979

Each of 105 cows was assigned to one of three levels of winter feeding from November to April for 9 consecutive years. In the period from 1954 to 1957 when they were 6 to 9 years old their eyes were examined at intervals of 6 months. The higher level of feeding was associated with an increase in the incidence and severity of ocular carcinoma. Fewer animals on the high level survived those on the medium and low feeding levels.

Kądziołka, A. (1960). W sprawie bioptycznego rozpoznawania guzów wątroby w oparciu o przypadek carcinoma cholangio-cellulare u psa. [Diagnosis of liver tumours by biopsy. Carcinoma of the liver in a dog.]—Med. Wet., Warszawa 16, 351-353. [In Polish. Summaries in English, French, German and Russian.] 3980

Liver biopsy in a 13-year-old dog revealed

hyperplasia of the connective tissue and atypical structure of the hepatic cells. The dog was destroyed and a primary carcinoma of the liver was diagnosed. There were no metastases.—M. GITTER.

Dougherty, R. M., Stewart, J. A. & Morgan, H. R. (1960). Quantitative studies of the relationships between infecting dose of Rous sarcoma virus, antiviral immune response, and tumor growth in chickens.—*Virology* 11, 349-370. [Authors' summary modified.] 3981

In chickens inoculated with high doses of the virus, the initial rise in antibody occurred about 5 days after development of a "size 3" tumour (weighing approximately 1 g.). With low doses of virus the time of development of the immune response was less regular. The rate and amount of antibody production appeared to be independent of the dose of virus. Whether the tumour grew rapidly or slowly or regressed was unrelated to levels of serum antibody.

Maternal antibody was found in yolk of unincubated eggs and in young chickens. It disappeared rapidly (half-life 8 days), and had no measurable effect on susceptibility to infection. Passive immunization of chickens with very large doses of specific immune serum delayed the tumour response when high or low challenge doses of virus were used, and slightly reduced tumour incidence when low challenge doses were used. Passive immunization did not affect the rate of tumour growth once tumours had appeared. It is concluded that antiviral immune response has little, if any, effect on the growth of Rous sarcomas in chickens once the tumour is produced.

*See also abst. 4104 (report, Western Australia).*

#### NUTRITIONAL AND METABOLIC DISORDERS

Berg, B. N. & Simms, H. S. (1960). Nutrition and longevity in the rat. II. Longevity and onset of disease with different levels of food intake.—*J. Nutr.* 71, 255-263. [Authors' summary modified.] 3985

On unrestricted feeding, rats attained large skeletal size and developed obesity. When food intake was restricted by 33 or 46%, levels which prevented fat accumulation and had little retarding effect on skeletal growth, longevity was extended and onset of disease was delayed. At 800 days of age only 48% of unrestricted as compared with 81 to 87% of restricted male rats were alive. Most

Riley, V., Lilly, F., Huerto, E. & Bardell, D. (1960). Transmissible agent associated with 26 types of experimental mouse neoplasms.—*Science* 132, 545-547. [Authors' abst. modified.] 3982

A transmissible agent or factor was found to be associated with all transplanted and spontaneous experimental tumours examined. This observation was made possible by utilization of a biochemical response of normal animals when inoculated with plasma or organ extracts from tumour-bearing hosts. This transmissible enzymic "lesion" is expressed by a five- to tenfold increase in the plasma lactic dehydrogenase activity of the injected normal test animals. The factor is heat labile, passes through bacteria-retaining filters, but is nondialysable. It is partially sedimented by centrifugation at 100,000g for 1 hour.

Derivaux, J. (1960). Quelques cas de leucose bovine. [*Bovine leucosis*.]—*Ann. Méd. vét.* 104, 129-141. 3983

Clinical and P.M. findings were described in 3 cows with leucosis in Belgium.—M.G.G.

Lagerlöf, B. (1960). In vitro investigations of the virus-induced fowl erythroleukemia. I. Long term cultivation of normal and leukemic bone marrow cells.—*Acta path. microbiol. scand.* 49, 344-360. [In English.] 3984

Bone marrow cells from normal and leukaemic fowls were cultured for at least 2 months in the form of cell suspensions in synthetic nutrient media to which 10% homologous normal plasma was added.—R.M.

females remained alive at this age, whether unrestricted or restricted.

Incidence of tumours and of cardiac, renal and vascular lesions at 800 days of age showed significant differences between unrestricted and restricted animals. In males frequency of lesions on unrestricted diet was 100% as compared with 64% incidence for the 33% restricted diet and 24% for the 46% restricted diet. All restricted females surviving to 800 days were free from disease, while 57% of the unrestricted had lesions; this suggested that life expectancy would be greater in restricted than in unrestricted females observed for longer periods.

Johnson, R. H., Hartman, P. A., Jacobson, N. L., Brown, L. R. & Van Horn, H. H., Jr. (1960). Sustained prevention of bloat by feeding antibiotics in rotation or in combination.—*J. Anim. Sci.* 19, 735-744. [Authors' summary modified.] 3986

The period of effectiveness of antibiotics could be extended considerably by feeding several different antibiotics in rotation or by feeding them in combinations. Penicillin, erythromycin and tylosin were particularly effective; less effective were chloramphenicol, novobiocin and oxytetracycline. Neomycin and Spontin (ristocetin) were of questionable value. Vancomycin, under some conditions, appeared to increase bloat. Penicillin and erythromycin were more effective for a longer period when fed together than when fed in rotation.

Falaschini, A. (1959). Effetti della oleandomicina nei broilers allevati in condizioni ambientali sfavorevoli. [Effect of oleandomycin on broilers kept under unfavourable conditions.]—*Atti Soc. Ital. Sci. vet.* 13, 271-273. [Summaries in English and French.] 3987

Falaschini, A. & Rappini, F. (1959). Effetti della oleandomicina sull'accrescimento dei broilers. [Effect of oleandomycin on growth of broilers.]—*Ibid.* 278-280. [Summaries in English and French.] 3988

I. Oleandomycin resin adsorbate was added to the food (8 g./ton) of battery-reared chickens to overcome the ill effects of unfavourable environmental conditions. Good results were obtained when treatment was undertaken early.

II. Chickens in a battery were kept on 4 tiers at different levels from the ground. Those on the lowest tier served as controls for those on the second and those on the 3rd served as controls for those on the fourth. The birds on the 2nd and 4th tiers were given oleandomycin adsorbate, 8 g./ton of food. After 60 days mortality was lower and weight gains were higher among birds on the higher tiers and those fed antibiotic than among those on the lower tiers and not fed antibiotic.

—T.E.G.R.

Nordin, J. H., Wilken, D. R., Brethauer, R. K., Hansen, R. G. & Scott, H. M. (1960). A consideration of galactose toxicity in male and female chicks.—*Poult. Sci.* 39, 802-812. [Authors' summary modified.] 3989

Female chicks are more sensitive than males to the toxicity of galactose given in the

food at a conc. of 15%. Diethylstilboestrol implanted intradermally or mixed with the food reduced the sensitivity of female chicks to galactose, while testosterone implants enhanced it.

Dodd, D. C., Blakely, A. A., Thornbury, R. S. & Dewes, H. F. (1960). Muscle degeneration and yellow fat disease in foals.—*N.Z. vet. J.* 8, 45-50. [Authors' summary modified.] 3990

Muscular dystrophy and steatitis in Thoroughbred foals in the North Island of New Zealand is described.

Affected foals were between 3 days and 5 months old, but usually 1-2 months old. Illness occurred during spring and early summer, and was either slow or sudden in onset. Affected foals were reluctant to move, had a stiff gait, and there was swelling and hardness of the nuchal crest and subcutaneous tissues over the gluteal muscles and abdominal wall. In acute cases the temperature was raised and the heart and respiratory rates accelerated. Death may occur within 24 hours of the onset or be delayed for up to a week. Some cases made a slow spontaneous recovery, but remained unthrifty for some months.

P.M. features are bilateral symmetrical lesions of muscle degeneration and thickening, hardening and yellow-brown discolouration of all subcutaneous and internal fat deposits.

The microscopic appearance of the lesions is described and therapy and prophylaxis with vitamin E and selenium are discussed.

Griffiths, R. C., Thornton, G. W. & Willson, J. E. (1960). Eight additional cases of pansteatitis ("yellow fat") in cats fed canned red tuna.—*J. Amer. vet. med. Ass.* 137, 126-128. 3991

This clinical account supplements the previous report on the yellow fat syndrome [*V.B.* 29, 1875].—R.M.

Hickey, F. (1960). Some metabolic aspects of the pasture/animal association.—*N.Z. J. agric. Res.* 3, 468-484. [Author's summary modified.] 3992

Heat production of resting, lactating cows was determined by indirect closed-circuit colorimetry. Grazing of highly improved ryegrass-clover pastures increased heat production by 22-24% compared with cows grazed on less improved swards.

It was suggested that the large thermodynamic costs incurred by cows grazed on such fodder constituted the principal factor

contributing to the low energy efficiency of dairy cows in New Zealand. Feed consumption of 100 cows grazed on improved New Zealand pastures is sufficient to maintain 122 cows at the same productive level if fed wholly or largely on compounded standard rations.

The physiological effects of energy-deficiency, and its relationship to metabolic disorders of grazing animals, are briefly discussed, also the feasibility of rectifying the energy/protein imbalance by breeding species of pasture plants of lower protein content, or by alternative methods of feeding and pasture management.

Vohra, P. & Kratzer, F. H. (1960). **Metabolism of DL-[2-<sup>14</sup>C] lysine in turkey poult**s.—*Biochem. J.* 76, No. 2 p. 37P of Proceedings. [Authors' abst. modified.] 3993

Maximal radioactivity in respiratory CO<sub>2</sub> was reached in the second hour after s/c injection of labelled lysine and about 22% of the activity was recovered in CO<sub>2</sub> within 24 hours. The following tissues contained radio-carbon: feathers, skin, kidney, spleen, liver, adrenals, lung, heart, blood and muscle. The specific activity was highest in spleen and in kidney. Rothstein & Miller (1954) proposed a scheme for lysine metabolism in rats. The isolation of radio-active glutamic acid and pipecolic acid as products of lysine metabolism suggests that this scheme may be applicable to turkey poult also. Melanin granules isolated from feathers were radio-active.

Weeth, H. J., Haverland, L. H. & Cassard, D. W. (1960). **Consumption of sodium chloride water by heifers**.—*J. Anim. Sci.* 19, 845-851. [Authors' summary modified.] 3994

Six heifers averaging 481 lb. body weight were supplied drinking water containing 0, 1 or 2% added NaCl for 30 days in winter.

1% NaCl increased water consumption by 52.8% and decreased blood urea. These heifers remained healthy over the 30 days.

2% NaCl was definitely toxic, causing severe anorexia, loss of weight and anhydremia. These heifers were lethargic and rectal temperatures were lowered; serum Na was raised significantly within 10 days; serum K also tended to increase, and blood urea decreased below levels observed on tap or 1% NaCl water. Two heifers collapsed after a short journey by lorry following 30 days on 2% saline. They showed tetany and were revived by intravenous Ca, Mg and glucose, and by rumen infusions of water and nutrients.

Paterson, R. & Crichton, C. (1960). **Grass staggers in large scale dairying on grass**.—*J. Brit. Grassl. Soc.* 15, 100-105. 3995

A 6% incidence of grass staggers in 30 dairy herds from 1954 to 1958 was associated with the fertilization of spring pasture with K and P before grazing commenced. In 1959 when only N was applied to spring pasture 55 cases of grass tetany were recorded, compared with 87 in 1958 and 90 in 1957. Common salt was given to 2 groups of 20 cows deprived of mineral supplements and showing signs of staggers. Milk yield increased immediately and no further cases occurred, although the Mg content of the blood rose only from 0.802 to 1.095 mg.% in one group and from 1.503 to 1.564 mg.% in the other. It was suggested that sodium deficiency due to excessive applications of K in spring may cause grass staggers.—M.G.G.

Clegg, F. G. & Watson, W. A. (1960). **Ryegrass staggers in sheep**.—*Vet. Rec.* 72, 731-733. 3996

A non-fatal locomotory disorder, accompanied by brief muscle spasms, occurred in two widely separated flocks in England during the exceptionally dry summer of 1959. It was stated to resemble closely ryegrass staggers of sheep in New Zealand. The pastures grazed by affected sheep were composed mainly of ryegrass. [A similar occurrence was reported from the Netherlands during the same dry summer. See *V.B.* 30, 2316.]—R.M.

Vervelde, G. J. (1960). **Netherlands Instituut voor biologisch en scheikundig onderzoek van landbougewassen Wageningen, Mededeling 100: Jaarverslag 1959**. [Institute for biological and chemical study of farm crops, Wageningen. Annual report, 1959.] pp. 35. Wageningen: The Institute. [In Dutch.] 3997

Studies on hypomagnesaemia included the relationship between grass composition and serum Mg in cattle. Between 65 and 90% of Mg in grass cannot be utilized by cattle and is excreted in the faeces. Since high Na content of pasture could cause low serum Mg, a low Na content could not be imputed as a contributory cause of hypomagnesaemia. Work in progress includes: influence of pasture fertilization on serum Mg in cows (A. Kemp); copper deficiency in cattle (J. Hortmans).—R.M.

Hanna, S. & MacIntyre, I. (1960). **The influence of aldosterone on magnesium meta-**

bolism. — Lancet, August 13th, 348-350.  
[Authors' summary modified.] 3998

In both normal and adrenalectomized rats aldosterone increased excretion of Mg in urine and faeces.

In adrenalectomized, but not in normal rats it reduced the intracellular Mg content of muscle.

The action of aldosterone on cell potassium may be partly secondary to a primary action on intracellular Mg. The magnesium depletion was attributed to a direct action of aldosterone, and not to secondary renal damage.

Alcock, N. & McIntyre, I. (1960). Interrelation of calcium and magnesium absorption. — Biochem. J. 76, No. 2, pp. 19P-20P of Proceedings. [Authors' abst. modified.] 3999

In magnesium-deficient rats the faecal excretion of Ca was lower than in rats receiving normal amounts of Ca and Mg. The net absorption of Ca in magnesium-deficient animals was equivalent to the total amount of Ca and Mg absorbed in the normal group.

From the first day of Mg deficiency, urinary excretion of Ca was diminished, despite the presence of hypercalcaemia. No change in glomerular filtration rate was detected and decreased urinary excretion of Ca may have been due to an increase in absorption of filtered Ca by the renal tubular cells.

Ritter, S., Spencer, H. & Samachson, J. (1960). The Sulkowitch test and quantitative urinary calcium excretion. — J. Lab. clin. Med. 56, 314-320. [Authors' summary modified.] 4000

To test the accuracy of the Sulkowitch test as an indicator of hyper- or hypocalcaemia and of hypo- and hypercalciuria, the results obtained on 500 urine samples from human beings were related to the actual concentration of urinary Ca and to the 24 hour urinary Ca excretion. The degree of correlation was too poor for the use of this test in clinical interpretation as an indicator of hyper- and hypocalciuria. This test should be replaced whenever possible by quantitative determinations of urinary and/or serum calcium.

Sovljanski, B., Antić, S. & Milosavljević, S. (1960). Prilog poznавању појаве паракератозе код свиња црно славонске расе. [Parakeratosis in Black Slavonic pigs.] — Vet. Glasn. 14, 317-321. [In Croat. Summary in English.] 4001

Incidence of parakeratosis in a group of

eight pigs fed a high calcium diet, was higher and skin lesions were more severe than in a similar group fed a diet low in calcium. Food conversion, however, was poorer and weight increase less in the low-calcium group.

Two groups each of eight pigs of the Large White breed were kept on similar diets to those of the two former groups. Generally, skin lesions were more frequent and severe than in Black Slavonic pigs, but weight gain and food conversion were better.—E.G.

Blamberg, D. L., Blackwood, U. B., Supplee, W. C. & Combs, G. F. (1960). Effect of zinc deficiency in hens on hatchability and embryonic development. — Proc. Soc. exp. Biol., N.Y. 104, 217-220. [Authors' summary modified.] 4002

Evidence is presented that deficiency of zinc in the diet of the breeding hen results in lowered hatchability, gross embryonic anomalies characterized by impaired skeletal development, and varying degrees of weakness in chicks which hatch.

Linkenheimer, W. H., Patterson, E. L., Milstrey, R. A., Brockman, J. A., Jr. & Johnson, D. D. (1960). Preparation and biological testing of a parenteral iron preparation. — J. Anim. Sci. 19, 763-768. 4003

The authors described a method of preparing a complex of ferric oxide and dextrin. They tested its toxicity and its efficacy in the treatment of piglet anaemia.—R.M.

I. Dvořák, M. (1960). Resorpce železa u sajíčích selat po perorálním podání železnatých a železitých sloučenin. [Iron absorption in sucking pigs after oral doses of bivalent and trivalent iron compounds.] — Sborn. čes. Akad. zemědělsk. Věd. vet. Med. 5, 497-510. [In Czech. Summaries in English and Russian.] 4004

II. Dvořák, M. (1960). Siderémie po intramuskulární aplikaci komplexu železa s dextranem telatém. [Haemosiderosis in calves, following intramuscular application of iron dextran complex.] — Ibid. 625-634. [In Czech. Summaries in English, German and Russian.] 4005

I. In piglets 31-65 days old absorption of ferrous compounds was more rapid than that of ferric compounds. Doses of 3.66 mg. of bivalent Fe/kg. body weight produced increases in serum Fe averaging 327.4 µg. per 100 ml. But the serum Fe also increased when cereal meal was fed. D. recommended minimum oral doses of 2 mg./kg. body wt. of

bivalent Fe for anaemic piglets, the dose of trivalent Fe should be double.

II. The effect of i/m injected iron dextran complex on plasma iron was studied. Doses of 2.5 mg. Fe/kg. body wt. produced 5 hours after injection an average plasma level of 578  $\mu\text{g}/100 \text{ ml}$ . Nine hours after injection of 7.6 mg./kg., the plasma iron level averaged 1,707  $\mu\text{g}/100 \text{ ml}$ .—E.G.

Obara, J. & Nakajima, H. (1960). [Iron storage in horse, cattle, pig and goat.]—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 23-28. [In Japanese. Summary in English.] 4006

In horses, cattle, pigs and goats the concentration of non-haemin iron per g. was higher in the spleen than in the liver. In pigs the total iron content of the liver was much higher than that of the spleen. In foals the spleen was rich in ferritin iron, but in adult horses haemosiderin iron predominated.

—M.G.G.

Mainardi, B. & Scolari, A. (1959). Accumulo epatico di vitamina A, liposolubile ed idrosolubilizzata, somministrata per os a giovani polli. [Liver storage, in fowls, of vitamin A rendered water soluble.]—Atti Soc. Ital. Sci. vet. 13, 141-144. [Summaries in English and French.] 4007

Liver storage of vitamin A in fowls was higher when the vitamin was rendered water soluble and protected by means of scleroproteins before oral administration.—T.E.G.R.

Oldfield, J. E., Muth, O. H. & Schubert, J. R. (1960). Selenium and vit. E as related to growth and white muscle disease in lambs.—Proc. Soc. exp. Biol., N.Y. 103, 799-800. [Authors' summary modified.] 4008

Selenium as  $\text{Na}_2\text{SeO}_3$ , given pre-natally per os to ewes or post-natally by injection to their lambs, prevented white muscle disease and increased the growth of lambs as compared with controls. Growth response to selenium fed pre-natally was greater than that to selenium injected post-natally. Massive doses of vitamin E at birth protected lambs from WMD, but did not improve their growth.

Frederick, G. L. (1960). A relationship between vitamin  $B_{12}$  and reproduction, and a method of diagnosing vitamin  $B_{12}$  deficiency in individual swine.—Amer. J. vet. Res. 21, 472-481. 4009

The vitamin  $B_{12}$  content of the blood was determined in 12 fertile sows and 10 barren sows immediately before and 24 and 48 hours

after i/m injection of 250  $\mu\text{g}$ . of the vitamin. The ratio of pre-injection to post-injection concentrations was 0.77 in fertile and 0.55 in barren sows. This was considered to be a better method of ascertaining vitamin  $B_{12}$  deficiency than simple determination of the blood concentration, which varied widely within the two groups.—M.G.G.

Jukes, T. H. & Shaffer, C. B. (1960). Anti-thyroid effects of aminotriazole.—Science 132, 296-297. [Authors' abst. modified.] 4010

Aminotriazole, like other antithyroid compounds and low-iodine diets, produces adenomatous changes in the thyroid gland of rats when fed continuously for long periods. Such changes are reversible if the treatment is discontinued. The antithyroid compounds that are naturally present in food are not regarded as causes of cancer.

Bodya, K. (1960). [Reactions to Takata's test of serum from cows with metabolic disorders.]—Veterinariya, Moscow No. 7 pp. 56-60. [In Russian.] 4011

Cows positive to Takata's serum test for liver function and showing signs of liver disorder usually became negative and their condition improved after treatment with glucose, vitamin D<sub>2</sub> and ascorbic acid. Some high-yielding cows remained positive, and it is considered that abnormal protein metabolism of the liver may be characteristic of such animals.—M.G.G.

Reid, R. L. (1960). Studies on the carbohydrate metabolism of sheep. X. Further studies on hypoglycaemia and hyperketonaemia in undernourished pregnant ewes and in ewes with pregnancy toxæmia. XI. The role of the adrenals in ovine pregnancy toxæmia.—Aust. J. agric. Res. 11, 346-363 & 364-382. 4012

Moderate undernutrition of non-pregnant ewes had little effect on blood glucose and ketone levels. In undernourished pregnant ewes, hypoglycaemia and hyperketonaemia was common in late pregnancy. By varying the degree and rapidity of reduction of the ration fed to pregnant ewes it was possible to produce any degree of hypoglycaemia, down to blood glucose levels below 20 mg.% and any degree of hyperketonaemia up to 30 mg.% before severe clinical signs of pregnancy toxæmia were observed. In any group of underfed ewes at the same stage of pregnancy and fed the same ration there were consistent differences in blood glucose and ketone levels

which depended on the number of foetuses. Clinical signs of pregnancy toxæmia were not observed in 40 ewes before 120 hours of fasting. The previous level of nutrition had little effect on the degree of hypoglycaemia after 70-120 hours of fasting, but did affect the degree of hyperketonaemia. Mean volatile fatty acid (V.F.A.) levels were higher in fasted pregnant ewes than in fasted non-pregnant ewes; this V.F.A. was thought to be of metabolic origin. Normoglycaemia was found to be common in ewes with pregnancy toxæmia. The pregnancy toxæmia syndrome was classified as acute or subacute. In the latter, cerebral depression reaches a certain stage of severity which is then maintained, survival is prolonged, and the ewes do not become comatose before death. Pregnancy toxæmia induced solely by undernutrition usually showed the acute syndrome. Blood ketones were higher in these cases than in fasted pregnant ewes which showed no clinical signs. Cases induced in previously well nourished ewes by fasting and severe environmental stress were usually subacute and in these cases blood ketones were no higher than in ewes which showed clinical signs. The significance of the above results is discussed in detail.

In fed and fasted and non-pregnant ewes the plasma cortisol levels were normally less than 1.5 g. per 100 ml.; however, in 20 field cases of pregnancy toxæmia the plasma cortisol levels were usually above normal. In cases of induced pregnancy toxæmia there was usually a marked increase in plasma cortisol levels at the onset of clinical signs. Adrenal hypertrophy was most pronounced in field cases of pregnancy toxæmia induced primarily by prolonged undernutrition. In ewes with pregnancy toxæmia there was a significant correlation between the fresh weights of the adrenals and the plasma cortisol levels. The possible relationships between abnormalities in carbohydrate and fat metabolism in ewes with pregnancy toxæmia and adrenal malfunction are discussed in detail.—I. D. WARDROP.

Reid, R. L. (1960). Studies on the carbohydrate metabolism of sheep. XII. Further studies on the diabetic nature of the metabolic abnormalities in ovine pregnancy toxæmia. —Aust. J. agric. Res. 11, 530-538. 4013

Changes in levels of glucose, ketones and cortisol in the blood of ewes with pregnancy toxæmia were determined after lambing,

intra-uterine foetal death, or intravenous administration of insulin.

After lambing or foetal death glucose increased to hyperglycaemic levels, and ketones decreased towards normal. Plasma cortisol remained abnormally high. This picture was maintained until the ewes died.

Insulin decreased blood glucose and ketones, but resistance was observed to its hypoglycaemic effect.

Variable responses of ewes to lambing or to treatment with glycerol are discussed.

The conclusion is drawn that the data are consistent with the hypothesis of a diabetes-like syndrome characterized by excessive adrenal activity, possibly in the presence of insulin deficiency.—C. H. GALLAGHER.

Pappenhaben, A. R. (1959). Parathyroid hormone and parturient paresis in dairy cattle.

—Dissertation, Purdue Univ. pp. 118. [Abst. from Diss. Abstr. 20, [No. 5.] 1566. (1960).] 4014

Parathyroid hormone administered within two hours after calving did not alter the blood patterns of Ca, Mg, alkaline phosphatase or inorganic phosphorus in first-calf heifers and mature animals which had never had milk fever. Cows that had previously had milk fever were given parathyroid hormone within two hours of calving and did not have milk fever at this calving. Although the basic physiological cause of milk fever remains unelucidated, P. suggested that two types of milk fever can be recognized: mild cases resulting primarily from low plasma calcium, and severe cases, requiring more than one treatment, apparently resulting from low levels of both calcium and inorganic phosphorus.

Cenni, B. & Finzi, A. (1959). Indagine sui tassi chetonemici in vacche da latte, nel periodo che intercorre fra le cinque settimane precedenti e le undici successive al parto. [Blood ketone levels in cows before and after parturition.]—Ann. Fac. Med. vet. Pisa 12, 160-174. [Summaries in English and French.] 4015

Blood ketone levels were studied in cows with reference to nutrition, number of parturitions, milk yield and ambient temperature. Differences were not significant. Levels were low one week before and increased up to the third week after parturition; differences were significant.—T.E.G.R.

Bach, S. J. & Hibbitt, K. G. (1960). The therapeutic use of cysteamine in bovine

**ketosis.**—Vet. Rec. 72, 797-799 & 800. 4016

The grossly elevated concentrations of pyruvate and alpha-oxoglutarate in the blood of cows with ketosis were thought to be partly due to a deficiency in coenzyme A. Because cysteamine is a precursor of coenzyme A, it was tried on 35 cows with ketosis. The dose was 750 mg. of the hydrochloride, dissolved

just before use in 250 ml. of water and inj. i/v; it was repeated at an interval of 2 or 3 days. Apart from 2 cases of secondary ketosis, all the cows recovered completely after 2 or 3 injections. There was rapid improvement in appetite and milk yield. Blood glucose increased to normal values within 4-8 days of the start of treatment.—R.M.

## DISEASES, GENERAL

Siegmund, O. (1960). Umfang und Ursachen der Abgänge in westdeutschen Geflügelzuchten. [Extent and causes of poultry losses in West Germany.] — Zbl. VetMed. 7, 204-209.

The causes of death in 392 chicks and 3,746 fowls received at the Federal research institute for small-animal husbandry at Celle in 1957 and 1958 were given in relation to type of establishment and age of the birds. In fowls over 8 weeks old the chief causes were, in order of importance, diseases of the laying organs, diseases of the digestive organs, endoparasites, leucosis, fowl paralysis, and tumours. Kidney diseases and visceral gout were commoner in poultry farms than in smaller, unspecialized units, while TB. was found only in fowls from the smaller units. The chief cause of death in chicks from poultry farms was coccidiosis, followed by diseases of the digestive organs, and infections of the navel and yolk sac, while chicks from smaller units had died mainly from salmonella infections, followed by coccidiosis, and poor feeding and management.—M.G.G.

Moroshkin, B. F. (1958-59). [I. Preliminary findings in bovine chronic haematuria. II. Composition of the herbage in affected districts.] — Sborn. nauch. Trud. L'vov. zootekh.-vet. Inst. 9, 279-284 & 295-310. [In Russian.] 4018

Amelin, I. S. (1958-59). [Significance of hay and pasture plants in bovine chronic haematuria in the Carpathians.] — Ibid. 311-316. [In Russian.] 4019

Moroshkin, B. F., Kostina, A. A. & Ivanskii, E. F. (1958-59). [Aetiology of bovine chronic haematuria.] — Ibid. 317-321. [In Russian.] 4020

These papers contain greater detail of findings previously reported in brief [V.B. 29, 3255]. Evidence pointed to the presence of a toxic factor in herbage. The papers provide very little additional evidence to support the suggestion that the toxic factor was radioactive.—R.M.

Settle, W. R. & Sauer, F. (1960). Demonstration of siliceous deposits in the kidneys of the guinea pig.—Amer. J. vet. Res. 21, 709-711. [Authors' summary modified.] 4021

Siliceous deposits formed in the kidneys of g.pigs given large doses of soluble silica orally or intraperitoneally. The amount of soluble silica administered was considerably greater than animals would normally ingest on a forage diet, and it cannot be concluded that silica calculi in range steers form from 'nuclei' of polymerized silica similar to those shown in the g.pig kidney. Nevertheless, this work indicates that insoluble deposits of silica may form in kidney tubules if large quantities of soluble silica are administered to an animal.

Romboli, B. (1959). Pneumopatie displastiche progressive (Jagziekte-simili) nelle pecore macellate in Toscana. [Pulmonary diseases resembling jaagsiekte in sheep in Italy. I. Lesions.] — Ann. Fac. Med. vet. Pisa 12, 50-96. [Summaries in English and French.] 4022

Literature on jaagsiekte and similar diseases in sheep and on analogous lung lesions in other animals and man is reviewed. Gross and microscopic findings in 20 slaughtered sheep with progressive pulmonary dysplasia are recorded. Two types of lesions were observed: adenomatous and cystic papillomatous—both considered of bronchioal origin. The lesions are described in detail and their aetiology and pathogenesis are discussed.—T.E.G.R.

Cervio, G. & Sironi, A. (1960). La rhinitis atrofica dei suini in Italia. (Nota preliminare.) [Porcine atrophic rhinitis in Italy.] — Vet. Ital. 11, 85-90. [Summaries in English, French and German.] 4023

An account of an outbreak, stated to be the first recorded in Italy.—T.E.G.R.

Dempsey, R. J. & Sanford, P. E. (1960). Effect of feeding various antibiotics on the hemor-

**rhagic condition in chickens.** — Poult. Sci. 39, 691-696. 4024

36 groups of 20 chicks were fed either a standard ration composed of maize and soya-bean oil meal or a "purified" ration. In addition some of them received in the food one of four antibiotics at concentrations of 10; 100; or 200 g. a ton, in either pure or crude form. In general, antibiotic supplements increased the incidence of the haemorrhagic syndrome, particularly in chicks on the standard ration, and particularly with penicillin at all concentrations and oxytetracycline at the higher conc. The syndrome occurred more often with crude antibiotics than with crystalline preparations, especially in the cases of oxytetracycline and zinc bacitracin.—R.M.

Newcomer, W. S. & Connally, J. D. (1960). **The bursa of Fabricius as an indicator of chronic stress in immature chickens.** — Endocrinology 67, 264-266. [Authors' abst. modified.] 4025

Repeated injections of ACTH or repeated stress in the form of immobilization resulted in regression in weight of the bursa of Fabricius in cockerels. Repeated injections of plasma from immobilized birds into other birds resulted in a similar regression when compared with bursae from birds injected with plasma from non-stressed birds. Results indicate that bursal regression can be used as an indicator of chronic stress in young fowls.

Garner, R. J., Jones, H. G. & Ekman, L. (1960). **Fission products and the dairy cow. I. The fate of orally administered cerium-144.** — J. agric. Sci. 55, 107-108. [Authors' summary modified.] 4026

The excretion of <sup>144</sup>Ce in the faeces, urine and milk was followed in two dairy cows receiving twice daily doses of 120 µc. with the feed over 10 days. During the terminal 3 days, recoveries from the faeces amounted to 93-119% of the daily dose. From the urine and milk, respectively, 0·23 and 0·17% and 0·010 and 0·016% of the total amount fed was recovered from the two animals.

The concentration of <sup>144</sup>Ce in various parts of the gut was estimated after equilibrium conditions had been attained. The highest concentrations were found in the contents of the omasum and hind-gut.

The possible use of the isotope as a marker in digestibility and similar trials is discussed.

Willard, W. K. (1960). **Avian uptake of fission products from an area contaminated by low-level atomic wastes.** — Science 132, 148-150. 4027

Wild birds overwintering in an area contaminated by wastes of low radioactivity accumulated much more radiocaesium in their muscle than birds inhabiting the area in summer. This was due to the ingestion of soil by seed-eating birds in winter. The uptake of fission products by passerine birds could serve as an assay of that to be expected in man.—M.G.G.

Compagnucci, M. (1960). **Ricerche sul comportamento delle transaminasi ossalacetica e piruvica nei sieri di bovini sani ed affetti da processi morbosì vari (idatidosi, distomatosi, tubercolosi).** [Activity of oxalacetic and pyruvic transaminase in the serum of healthy and of diseased cattle.] — Acta med. vet., Napoli 6, 155-185. [Summaries in English and French.] 4028

In cattle with light echinococcus or liver fluke infestation enzyme values were normal; in heavy infestation there was a significant increase in both transaminases. In tuberculous cattle there was a significant increase in serum glutamic pyruvic but not in serum glutamic oxalacetic transaminase.—T.E.G.R.

Atkins, E. (1960). **Pathogenesis of fever.** — Physiol. Rev. 40, 580-646. 4029

A valuable review of work done on experimentally-induced fever, with 603 references.—R.M.

Too, K. (1960). **Abnormal electrocardiograms in the horse.** — Jap. J. vet. Res. 8, 29-34. [In English. Author's summary modified.] 4030

T. studied a horse with colic. The ECG revealed irregularity of impulse arising at the sinus node, incomplete A-V block; first degree of A-V block, ectopic focus in the auricle; diphasic P' waves, multifocal ventricular premature beats; ventricular extrasystoles, and paroxysmal ventricular tachycardia. These changes continued for 3 days. Phonocardiogram of the ventricular premature beat revealed decrease in amplitude and shortening of duration, as compared with normal.

Kazakova, M. V. & Akulov, A. V. (1959). **[Relationship between electrocardiograph, heart lesions and symptoms in cattle.]** — Trud. vsesoyuz. Inst. eksp. Vet. 22, 258-271. [In Russian.] 4031

Nine cattle aged about 18 months were examined clinically and by ECG during 2-3

weeks after various surgical operations such as rumenotomy and claw amputation, all complicated by wound sepsis. They were then killed and the hearts were examined histologically. Abnormalities in the ECG were described. Varying degrees of exudative-proliferative change were found in muscle and nerve ganglia in the heart. There was close correlation between ECG changes and heart lesions.—R.M.

Hulland, T. J. (1960). Arteriosclerotic changes in the visceral arteries of sheep.—*Canad. vet. J.* 1, 195-205. [Summary in French. Author's summary modified.] 4032

Arteriosclerotic changes of the tunica intima were frequently found in the visceral arteries. These plaque-like thickenings increase in size and number with age and appear to begin at the mouths of branch arteries. In old animals, the intimal plaques cover most of the intimal surface. Fat droplets were frequently incorporated into the plaques in the aorta, but rarely in the smaller arteries in the viscera. No differences were detected between the arterial changes found in normal sheep and those found in sheep affected with a variety of diseases.

Steiner, P. E. (1960). Precision in the classification of cirrhosis of the liver.—*Amer. J. Path.* 37, 21-47. 4033

The main types of cirrhosis in man, excluding special types such as pigmentary, biliary, central, parasitic, were classified as post-necrotic, portal, and florid on microscopical evidence.—R.M.

Genovesi, B. & Genovesi, G. (1960). Reperto necroscopico di pancreatoliti in un vitello. [Pancreatic calculi in a calf.]—*Veterinaria, Milano* 9, 173-175. 4034

Multiple calculi were observed in the pancreas of an apparently healthy young bull after slaughter.—T.E.G.R.

Hearn, E. M. & Keep, M. E. (1959). Torsion of the stomach in the dog.—*J. S. Afr. vet. med. Ass.* 30, 389-391. Discussion: pp. 391-393. 4035

Symptoms observed in 7 aged dogs were: extreme distress, acute abdominal pain, tympanites, difficult respiration and retching (but not vomiting). Treatment consisted in slow relief of pressure by means of a small bore trocar (a large bore may cause death, apparently from shock); a stomach tube was inserted as far as it would go and the condition was corrected surgically, through the left flank, the tube automatically slipped into the stomach allowing the further escape of froth and gas. The cause of the condition is obscure but violent exercise after a heavy meal is considered to play an important role. —T.E.G.R.

Catarsini, O. (1959). Il comportamento elettroforetico delle proteine urinarie in cani nefropatici. Ricerche preliminari. [Electrophoretic study of urinary proteins in dogs with kidney disease.]—*Atti Soc. Ital. Sci. vet.* 13, 635-638. [Summaries in English and French.] 4036

Serum and urine samples from 7 dogs with varying degrees of proteinuria were subjected to electrophoresis. In heavy proteinuria there was an increase in the urinary albumin fraction. As the proteinuria decreased, during clinical recovery, there was a decrease in urinary albumin and an increase in urinary gamma globulins. In dogs with leishmaniasis the electrophoretic tracings of the serum and the urinary proteins were similar.—T.E.G.R.

Startup, F. G. (1960). Diseases of the canine eye. I. Examination of the eye. II. The eyeball. III. The uveal tract.—*Vet. Rec.* 72, 653-660; 675-684 & 724-731. 4037

A general account, with special attention to recent advances.—R.M.

## POISONS AND POISONING

Chamberlain, C. C. (1959). Some effects of chronic and acute fluoride levels on metabolism and distribution of  $F^{18}$  in selected tissues of cattle.—*Dissertation, Iowa* pp. 156. [Abst. from Diss. Abstr. 20, 2462. (1960).] 4038

Calves aged 7-11 months and yearling cattle were fed 300 p.p.m. of fluoride for a period up to 55 days. No difference in the blood glucose between those receiving fluoride

and the controls was observed.

After 35 days cattle from both age groups were dosed with radioactive fluoride periodically. Definite age differences were demonstrated in the rate of removal of the isotope from the bloodstream, excretion in urine, and deposition in bone. The younger animals appeared to metabolize the isotope faster than the yearlings.

About 75% of the isotope appearing in

the blood was in the plasma fraction, and it was distributed about equally between the protein and non-protein fractions. Removal of the isotope from the blood was very rapid. Three of the tissues studied (thyroid, liver and spleen) appeared to retain the isotope independent of the blood level.

The isotope appeared in the saliva soon after i/v inj. This, coupled with appearances in the gastro-intestinal tract and the faeces, indicates recirculation of fluoride in the metabolic pool. The short half life of the isotope did not permit balance and/or equilibrium studies. Similarities previously suggested concerning bone deposition of calcium and fluoride were confirmed by this study.

Lewis, D. (1960). Ammonia toxicity in the ruminant. — J. agric. Sci. 55, 111-117.  
[Author's summary modified.] 4039

The normal level of blood ammonia in the sheep seems to be somewhat higher than in non-ruminants.

The toxicity of ammonium acetate, ammonium chloride or urea placed in the rumen follows different metabolic pathways. With the chloride there is uncomplicated metabolic acidosis which is not, however, adequate to account for the toxic symptoms. When the acetate is administered there is also a respiratory alkalosis but in the presence of urea the changes in the acid-base status do not account for the toxicity.

The toxicity is almost certainly due to a direct effect of the circulating ammonium ion concentration.

The organisms within the rumen rapidly become adapted (7 days) to handle large quantities of ammonia by a synthetic pathway. Intravenous administration of L-arginine did not markedly ameliorate the ammonia toxicity.

Clark, S. P. & DuBose, R. T. (1960). Oral toxicity to poultry of a commercial octylamine. — J. agric. Food Chem. 8, 147-151. 4040

200 chickens were fed for 9 weeks rations containing 0·036%-0·36% by weight of primary *n*-octylamine, a solvent used for extracting gossypol from cottonseed meal. No toxic effects were seen. Four of 7 birds died in 4 days when forced to ingest rations containing 4·89% of the amine. P.M. lesions in these birds and in chickens given a single large dose of the amine included hardening and

peeling of the crop lining, inflammation of the intestine, oedema and congestion of the lungs, and swelling of the anterior lobes of the kidneys.—M.G.G.

Glees, P. & White, W. G. (1960). A study of skin absorption effects of tri-ortho-cresyl phosphate (TOCP) in hens. — J. Physiol. 153, No. 1 pp. 20P-22P of Proceedings [Authors' abst. modified.] 4041

The authors determined the smallest dose of TOCP which causes either clinical or neuropathological alterations in adult fowls. The substance was painted on the comb, which adsorbs it well (0·2 ml. of pure TOCP being applied at a time). The hens were subsequently perfused with 10% formal saline to avoid the staining artefacts common in Marchi preparations of unperfused material. Doses of 0·1 ml./kg. body wt. caused, after 8-25 days, a weakness of the extensors of the legs and signs of intoxication such as loss of appetite and listlessness. Half this dose caused only neuropathological changes, such as selective myelin degeneration in the long descending and ascending tracts, and the animal's behaviour and motor function gave no indication of any damage to the central nervous system, at any rate during the period allowed for observation. Doses below 0·05 ml. produced neither clinical nor neuropathological symptoms, but because of the slow excretion of TOCP it is not impossible that continual small doses would in time have the same effects as larger single doses of 0·05 ml. Such cumulative action could result in degenerative changes in the descending and ascending tracts, ultimately presenting an obvious clinical picture. Herein lies the danger, particularly in industry, and further work is in progress.

Gorham, P. R. (1960). Toxic waterblooms of blue-green algae.—Canad. vet. J. 1, 235-245.  
[Summary in French.] 4042

Cultures of several blue-green algae, including those suspected of causing the deaths of farm animals, were grown. They varied greatly in toxicity and at least four toxic factors were recognized. The "fast death factor" was an endotoxin present in *Microcystis aeruginosa*. This alga was grown on a large scale and the cells proved toxic when ingested by sheep, calves, fowls and lab. animals, although ducks were resistant to its action. The endotoxin was a stable cyclic polypeptide which killed mice when 0·47 mg. per kg. body wt. was injected i/p.—R.M.

Veselova, T. P., Velikovskaya, Y. A. & Gordeeva, L. M. (1959). [Mechanism of the toxic effect of carbon tetrachloride in cattle. I. Pharmacology and biochemistry.] — Helminthologia 1, Nos. 1-4, pp. 287-290. [In Russian. Summaries in English and German. English summary modified.] **4043**

The experiments on laboratory animals and isolated intestine of g.pig showed that  $\text{CCl}_4$  had neither histamine nor antihistamine action.  $\text{CCl}_4$  not possessing any histamine action may cause disturbance in neuro-reflex

*See also absts. 3989 (galactose toxicity in chicks); 4103 (report, West of Scotland Agricultural College); 4104 (report, Western Australia).*

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Varela, G., López Grande, F. & Boza, J. (1960). Acción de la protoveratrina en la producción láctea de cabras de raza granadina en stress térmico estival. [Increasing milk production of goats by administration of protoveratrine during the heat of summer.] — Bol. Inf. Cons. Col. vet. Esp. 7, 379-384. **4044**

Three goats stabled during summer were fed 10 mg. of protoveratrine daily for 10 days. In this period they yielded about 10% more milk containing 11% more fat than in the preceding and subsequent 10-day periods. Three goats fed 7 mg. daily for 10 days yielded 5% more milk containing 8% more fat, but 3 fed 5 mg. daily for 10 days yielded 5% less milk with 8% less fat.—M.G.G.

Downey, N. E. (1960). Serum calcium and magnesium levels in ewes following the admission of carbon tetrachloride. — Vet. Rec. 72, 598-599 & 600. [Author's summary modified.] **4045**

18 lactating ewes were given  $\text{CCl}_4$  either orally or subcutaneously. A fall in serum Ca of 13% was noted 96 hours after dosing but the mean fall up to the 96th hour was not statistically significant. No significant change was found in the serum Mg levels.

Gilbreath, J. C., Welch, Q. B., Drye, K. J. & Waggoner, R. E. (1960). The effect of reserpine on mature chickens.—Bull. Okla. agric. Exp. Sta. No. B-551 pp. 16. **4046**

Reserpine had no apparent effect on growth, mortality, behaviour of cocks aged 3-4 months given from 0.5 to 9 mg./kg. of food daily for about 3 months. Even 25 mg. per kg. of food (equivalent to about 0.94 mg./kg. body wt. daily) appeared to have no effect.

regulation, facilitating the emergence of histamine from its bound state. The quantity of histamine determined in the blood plasma of cows is 3-5  $\mu\text{g}.\%$ , while the quantity in cows infected with *Fasciola* is higher (14-20  $\mu\text{g}.\%$ ). Increase in blood histamine has been found in cows after i/m inj. of  $\text{CCl}_4$  (by 18-26  $\mu\text{g}.\%$ ). There was a large increase after injection into the rumen (by 36-40  $\mu\text{g}.\%$ ). The quantity of histamine in the blood plasma plays an important role in the toxicity of  $\text{CCl}_4$  in cattle.

When the drug was given to mature pullets at 2 mg./kg. of food for 7 months it had no apparent sedative effect. The incidence of mortality, cannibalism and prolapse was similar in untreated birds. It appeared to reduce feed intake and slightly reduce egg production.—R.M.

- ✓ I. Goldman, L., Beyer, A. & Schwarz, J. (1960). Absence of local cytotoxic change in man from griseofulvin. — Nature, Lond. 187, 335. **4047**
- ✓ II. Barich, L. L., Nakai, T., Schwarz, J. & Barich, D. J. (1960). Tumour-promoting effect of excessively large doses of oral griseofulvin on tumours induced in mice by methylcholanthrene.—Ibid. 335-336. **4048**

I. Saturated soln. of griseofulvin was injected 30 times in doses of 0.1-0.2 ml. into normal skin or into skin tumours or applied to tumours as a 1% lotion daily for 3 weeks. Skin biopsy failed to detect inflammatory or anti-inflammatory action and the drug neither stimulated nor retarded the growth of tumours.

II. 40 mice were given food containing 0.5 or 1% griseofulvin for 6 weeks. At the end of this time methylcholanthrene was applied twice weekly to the skin of 10 mice. None of 20 untreated mice developed skin tumours after 12 weeks of methylcholanthrene applications but 2 of 10 which received griseofulvin developed tumours. None of 20 mice which received griseofulvin but not methylcholanthrene developed tumours. The dosage of griseofulvin was about 100 times that recommended for man.—R.M.

Natschaff, B., Gabraschanski, P. & Gradinarski, G. (1960). Über die Anwendung des Pen-

diomid als Spasmolyticum bei Pferd und Rind. [Azamethonium bromide as a spasmolytic drug in horses and cattle.] — Berl. Münch. tierärztl. Wschr. 73, 287-290. [Summary in English.]

4049

This ganglion-blocking agent is also known as "Pendiomid" and pentamethazine dibromide. Its action was tested on healthy horses after i/v inj. of 200-500 mg. It was found useful for the treatment of colic and oesophageal obstruction in horses and in spasm of the fore-stomachs of cattle.—R.M.

Maplesden, D. C., McSherry, B. J. & Stone, J. B. (1960). Blood sugar levels in normal cows before and after treatment with prednisolone and dexamethasone. — Canad. vet. J. 1, 309-312. [Summary in French. Authors' summary modified.]

4050

Prednisolone (100 mg.) and dexamethasone (10 mg.) were injected i/m into 20

*See also absts.* 3782 (drug-resistant staphylococci); 3783 (chlortetracycline-resistant staphylococci in treated beef); 3784 (penicillin BRL 1241); 3785 (nitrofurazone treatment of acute mastitis in cows); 3791 (antibiotics in anthrax); 3809-3810 (keratoconjunctivitis in cattle); 3811 (susceptibility of Haemophilus (*Moraxella*) bovis to antibiotics and sulphonamides); 3820 (furazolidone and serology in pulmonar disease); 3830 (progesterone treatment and bovine brucellosis); 3834 (action of disinfectants on brucella); 3852 (antibiotics in ovine vibriosis); 3860 (mycostatin (nystatin) in turkey crop mycosis); 3864 (antibiotics in turkey sinusitis); 3868 (nucleocidin, a trypanocide); 3875 (effect of nicarbazine on *E. terrea*); 3898 (effect of cortisone, ACTH, thyroxine and thiamylac on murine encephalomyelitis); and mepacrine treatment); 3938-3942 & 3945 (parasiticides); 3946-3949, 3953-3955, 3965-3969, 3971, 3976 & 4043 (anthelmintics); 3986 (antibiotics in bloat).

### PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Brook, A. H. & Short, B. F. (1960). Regulation of body temperature of sheep in a hot environment.—Aust. J. agric. Res. 11, 402-407. [Authors' summary modified.]

4052

The importance of sweating as a means of evaporative cooling in shorn sheep was studied by comparing the rectal temperatures of sheep with sweat glands (6 ewes, 4 rams), and without sweat glands (2 ewes, 2 wethers), at an air temp. of 40°C. and a water vapour pressure of 28.1 mm. Hg.

During the first hour the rise in rectal temp. of the sheep without sweat glands was greater than the rise in the normal animals (1.1° vs. 0.7°C.). After 6½ hours the mean rectal temp. was higher (40.6°C.) in the sheep lacking sweat glands than in the normal ewes (39.9°C.). The most rapid rise in rectal temp. after the first hour was that of the rams, which reached a mean value of 40.8°C. after 6½ hours.

It is concluded that panting is the principal method of evaporative cooling in sheep. Sweating, though of lesser importance, is advantageous to the shorn animal, but its usefulness to sheep in wool is unknown.

Mullick, D. N. (1960). Effect of humidity and exposure to sun on the pulse rate, respiration

normal cows. Blood samples were drawn from the jugular vein immediately before treatment and 6, 24, 48 and 72 hours afterwards and analysed for sugar.

Differences between the action of the two drugs were not statistically significant, and in every case the blood sugar returned to pre-injection levels 72 hours after treatment.

Injection caused a drop in milk production, which was more pronounced with dexamethasone.

Hall, L. W. (1960). Muscle relaxants in veterinary anaesthesia. — Vet. Rec. 72, 789-796.

4051

Muscle relaxants were used on 899 animals (horses, pigs, dogs and cats) anaesthetized at the Cambridge veterinary hospital over the past six years. H. discussed their action and uses.—R.M.

zones if they are protected from direct sunlight, which can be easily done by altering the time of grazing from day to night.

Kazakova, E. M. (1959). [Chemical and morphological composition of blood in calves reared in unheated buildings.] — Trud. vsesoyuz. Inst. eksp. Vet. 22, 272-278. [In Russian.]

4054

The blood of calves born in January and reared in unheated buildings in Lithuania (average temp. -4·8°C. in February and -1·6° in March) was superior in cell content and in haemoglobin, phosphorus, nitrogen and Ca than that of calves reared in heated buildings (average temp. +6° to 9°C.). — R.M.

Taneja, G. C. (1960). Sweating in cattle. VI. Density of sweat glands and its relationship with cutaneous evaporation.—J. agric. Sci. 55, 109-110. [Author's summary modified.]

4055

Two calves (zebu  $\times$  Australian Illawarra Shorthorn and Shorthorn) of about 7-8 months of age were exposed to controlled atmospheric conditions. Cutaneous evaporation from the shoulder and belly areas of these calves was measured by the capsule method. Density of the sweat glands in the shoulder and belly areas was measured, using a biopsy punch. Density was estimated by counting the hair follicles.

The zebu cross sweats more than the Shorthorn, at least from the shoulder area, and this is related to its higher sweat gland density as compared with that of the Shorthorn.

In the zebu cross cutaneous evaporation from the shoulder area is greater than that of the belly and this is associated with the differences in the number of sweat glands.

In the Shorthorn cutaneous evaporation is the same from both shoulder and belly areas and the number of sweat glands in these regions is also the same.

Berman, A. (1960). Peripheral effects of L-thyroxine on hair growth and coloration in cattle.—J. Endocrin. 20, 288-292. [Abst. from author's summary.]

4056

Topical application of 0·6 mg. L-thyroxine to 100 sq. cm. of skin increased hair growth by 18% and pigmentation by 18·7% above the values for untreated areas. This suggests a possible role of the thyroid in the control of the annual cycle in hair growth and shedding in cattle.

Mount, L. E. (1960). The influence of huddling and body size on the metabolic rate of the young pig. — J. agric. Sci. 55, 101-105. [Author's summary modified.]

4057

The oxygen consumption of young pigs from 1 to 37 days of age was measured in a closed-circuit respiratory metabolism chamber, over the environmental temperature range 4°-37°C.

The values obtained for single pigs alone in the chamber were compared with the results of measurements on groups of pigs 3-6 days of age taken together. As environmental temp. fell below 30°C. and the grouped pigs huddled together, oxygen consumption per kg. for the group became smaller than values for single pigs of the same individual weight, and corresponded more with results from the larger single pig.

Rectal temp. was maintained in pigs of the group at a lower energy cost than that required for the single pig, the saving in energy expenditure becoming proportionately greater as ambient temp. fell. These results are discussed in relation to body size and skin temperature.

Sudakov, N. A. (1959). I. Comparison of electrocardiogram and blood pressure in draught, Thoroughbred and trotting horses. II. Functional heart murmur in Thoroughbred and trotting horses.] — Trudy Mosk. Vet. Akad. 24, Pt. 2, 163-170 & 171-177. [In Russian. Summaries in English.]

4058

I. S. examined 150 Orlov and Russian trotters, 100 Soviet heavy draught horses and 50 Thoroughbreds clinically and by electrocardiography (ECG), arterial oscillography, phlebotonometry; the circulation time was measured with the aid of lobeline. Each type of horse had its own peculiarities. For example, the voltage of the P, R and T waves of the ECG, and arterial and venous pressures, were much lower in draught horses than the other types.

II. A systolic murmur was regarded as normal in 290 horses examined at the Moscow racecourse over 4 years. Suggested causes were (1) temporary distension of the left atrioventricular orifice associated with dilatation of the left ventricle; (2) reduced tension of the papillary muscle associated with fatigue of the heart muscle; (3) increased tension of the papillary muscle associated with increased tone of the myocardium.—R.M.

I. Ristović, L., Pavlović, D., Šibalić, S., Trumić, P. & Panjević, D. (1959). [Distri-

- bution of nitrogen compounds in the serum of pigs in the first days of life.]—Acta vet., Belgrade 9, No. 4 pp. 29-40. 4059  
 II. Pavlović, D., Ristović, L., Trumić, P., Šibalić, S. & Panjević, D. (1959). [Electrophoretic examination of serum proteins of pigs.]—Ibid. pp. 65-76. [In Serbian. Summaries in English.] 4060

I. In new-born piglets, serum levels of non-protein nitrogen compounds were higher than in adult pigs. The total protein content was low. The tryptophane level increased more than fourfold after ingestion of colostrum. There was an unexplained variation in serum levels of nitrogen compounds in individual litters.

II. Serum protein fractions were established electrophoretically in 15 new-born piglets of three litters, before ingestion of colostrum and during the first six weeks of life. Relative and absolute values were given. Until the seventh day of life a type of albumin, different from that found in older pigs, was present in the serum. There were traces of  $\gamma$ -globulin in the serum of piglets before ingestion of colostrum.—E.G.

Accardi, F. (1959). Sul passaggio degli alimenti attraverso l'apparato digerente di vacche da latte ad alimentazione mista. Ulteriori indagini sperimentali. [Passage of food through the digestive tract of dairy cows on mixed feed.]—Atti Soc. ital. Sci. vet. 13, 265-268. [Summaries in English and German.] 4061

Two dairy cows on a normal ration were fed oatmeal stained with diamond fuchsin. Two hours later stained particles in rumen contents were in the proportion of 0.0377 g. per 100 ml. It is concluded that the passage of food through the rumen is more rapid than hitherto envisaged.—T.E.G.R.

Thomas, G. J. (1960). Metabolism of the soluble carbohydrates of grasses in the rumen of the sheep.—J. agric. Sci. 54, 360-372. [Author's summary modified.] 4062

Bacteria and protozoa from the rumen of sheep were examined for invertase activity.

Fermentation of the soluble carbohydrates of grass was studied in an 'artificial rumen'. The micro-organisms converted 30% of the substrates into storage starch.

Rumen contents from a grass-fed sheep were twice as active towards grass carbohydrates as those from hay-fed sheep.

The hay and grass fed to the sheep contained invertase activity.

- Andrews, W. H. H., Britton, H. G., Huggett, A. St G. & Nixon, D. A. (1960). Fructose metabolism in the isolated perfused liver of the foetal and new-born sheep.—J. Physiol. 153, 199-208. [Authors' summary.] 4063

Perfusion circuits suitable for metabolic investigations have been developed for the foetal or neonatal sheep liver.

It has been shown that sorbitol can be converted to fructose by the preparation. Glucose, galactose and inositol did not increase the fructose concentration in the perfusate.

Under these experimental conditions the foetal liver appears to be unable to metabolize fructose, but rapid utilization cannot be detected in the perfused neonatal liver before the fifth day after birth.

Croft, P. G. (1960). The e.e.g. as an aid to assessment of state of consciousness in the dog.—J. Physiol. 151, No. 2. pp. 6P-8P of Proceedings. 4064

By using the electroencephalogram it was possible to discover if a dog given a muscle relaxant together with a general anaesthetic was unconscious, or conscious but paralysed.

—R.M.

Smith, R. N. (1960). Transient elements of the sheep skeleton.—Brit. vet. J. 116, 276-280. [Author's summary.] 4065

Several parts of the skeleton which ossify as separate elements in foetal life either disappear or fuse with other structures during later development. The second and fifth metacarpals may persist, but are greatly reduced while the corresponding metatarsals are completely removed. The clavicle also disappears after appearing as a bony structure and most of the fibula disappears. Many of the carpal and tarsal bones ossify as separate elements which later fuse.

It is suggested that all these structures must appear as separate elements for the proper development of the foetus. When their work is accomplished the structures may then be removed, in part or completely, or lose their identity by fusing with neighbouring structures.

Ashdown, R. R. (1960). Development of penis and sheath in the bull calf.—J. agric. Sci. 54, 348-352. [Author's summary modified.] 4066

The penis was examined in five bull calves during the first year of life, using epidural anaesthesia or sedation with chlorpromazine hydrochloride.

The process of separation between penis

and sheath is described and data on age and weight of the calves are given.

There was considerable variation in times and rates of development, but in general the penis began to separate from the sheath at about 4 months of age, and the process was completed at about 10 months.

From the second to the sixth or seventh month of life the penis was short, and could not be protruded manually.

Howes, J. R., Hentges, J. F. & Warnick, A. C. (1960). Adrenal gland weights of Hereford and Brahman cattle.—*Proc. Soc. exp. Biol., N.Y.* 104, 322-324. [Authors' summary modified.] **4067**

Weights of individual and paired adrenals together with adrenal-body weight ratio for a total of 119 male, female and castrated Hereford and zebu (Brahman) cattle are presented. There was no significant difference between the weight of glands for the 2 species although adrenal-body weight ratio was consistently smaller in zebu cattle. Adrenal weight in cattle is not apparently influenced by sex.

*See also absts. 4115 (book, animal physiology); 4116 (CIBA Foundation colloquia on ageing).*

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Demott, B. J. & Easterly, D. G. (1960). Removal of iodine<sup>131</sup> from milk.—*J. Dairy Sci.* 43, 1148-1150. [Authors' summary modified.] **4069**

These data indicate that radio-iodine can be removed from milk in a manner similar to that reported for strontium removal [*V.B.* 30, 2379], that vacuum treatment of milk will not lower its concentration, and that the amount secreted in the milk is quite variable, ranging in this study from 4·8 to 15·6% of the single oral dose in seven days. The reasons for this are not apparent.

Fewster, G. E. (1960). Major causes of condemnation of meat.—*Aust. vet. J.* 36, 117-121. **4070**

Statistics are given on the pattern of carcass condemnation for cattle, sheep, lambs and pigs in various parts of Australia. The importance of bruising, ecchymosis and soiling is discussed in some detail. Attention is drawn to the lack of detailed information on the reasons for edible offal condemnation and the losses of meat between slaughter and the consumer. The need for complete and accurate records of meat inspection is stressed.

—I. D. WARDROP.

Castration decreased adrenal-body weight ratio, which is the reverse of that observed in other species. While the left adrenal was consistently larger than the right, total adrenal weight was much smaller in relation to unit body weight than in any other mammalian species for which data are available. The bovine adrenal cortex appears to be smaller in relation to the whole gland than in most other mammals (as does the zona fasciculata).

Blanch, E. & Setchell, B. P. (1960). Urinary excretion of creatine in the sheep.—*Aust. J. biol. Sci.* 13, 356-360. **4068**

Creatininuria was found in normal rams, wethers, and ewes on ordinary diets. This finding suggests caution in using urine creatine concentration or creatine to creatinine ratios as diagnostic aids in muscular dystrophy in sheep. No change in creatine output per 24 hours was observed when the ewes were fasted for 6 days. Values are given for the ratio creatine clearance to creatinine clearance in rams, wethers, and ewes and for creatine clearance in ewes.

Brydon, P. (1960). The major causes for condemnation of meat in New South Wales.—*Aust. vet. J.* 36, 113-117. **4071**

The major causes for the total and partial condemnation of cattle, pig, sheep and calf carcasses during 1959 at the State Abattoir, Homebush, N.S.W., are recorded. These data are compared with previous years' observations. General information is also given on the origins, live-weights and seasonal fluctuations of the various species of livestock.

—I. D. WARDROP.

Nottingham, P. M. (1960). Bone-taint in beef.—II. Bacteria in ischiatic lymph nodes.—*J. Sci. Fd Agric.* 11, 436-441. [Author's summary modified.] **4072**

In a survey of the bacteria in ischiatic lymph nodes taken from freshly-killed cattle, a number of types of both Gram-positive and Gram-negative organisms were isolated. The average number of aerobic bacteria per lymph node appeared to be lower after a period of high rainfall for the two months preceding slaughter than after a dry period.

Simultaneous occurrence of bone-taint involving six sides of beef was studied. Potential taint-producing bacteria isolated

from the tainted meat included bacilli, coliforms, pseudomonads and clostridia. In the second outbreak the spoilage was mainly due to anaerobes.

The bacterial flora of lymph nodes and tainted meat were found to have much in common. This is considered to be further evidence for the view that the infection which causes bone-taint may be present in the lymph nodes during life, and spread to the surrounding tissues after death.

- I. Whittem, J. H., Letts, G. A., Rideout, F. C. & Frith, M. R. (1960). **Ecchymosis in beef cattle.** —Aust. vet. J. 36, 122-124. 4073  
 II. Charles, D. D. (1960). **Ecchymosis in the beef carcass.** —Ibid. 124-126. 4074

*See also absts. 3927 (psittacosis in Yugoslavia); 3950 (human fascioliasis in Britain); 3970 (Toxocara canis in man); 4117 (book, milk examination).*

#### REPRODUCTION AND REPRODUCTIVE DISORDERS

- Spryszak, A. & Romaniuk, J. (1960). Grupy krwi bydła w ustalaniu pochodzenia cieląt po sztucznym unasienianiu krów. [Blood groups in cattle and determination of parentage of calves produced by artificial insemination.] — Med. Wet., Warszawa 16, 358-364. [In Polish. Summaries in English, French, German and Russian.] 4075

Blood grouping was carried out on 24 calves born after insemination from different bulls. It revealed that in 2 instances the cows had conceived to the first and not the second insemination and the records made by inseminators were shown to be wrong in 3 cases with regard to the bulls and in 4 with regard to the cows.—M. GITTER.

- Wales, R. G. & White, I. G. (1960). The toxicity of some antibacterials to fowl spermatozoa. —Aust. J. biol. Sci. 13, 361-370. 4076

Penicillin and sulphanilamide at one mg. per ml., chloramphenicol at 0.2 mg./ml., and oxytetracycline at 0.5 mg./ml. depressed motility at a 1 in 20 dilution of semen in a medium having a similar tonicity to fowl seminal plasma.

Streptomycin, sulphadimidine, chlortetracycline and tetracycline were not significantly toxic in the highest concentrations used.

Penicillin, sulphanilamide, chloramphenicol and oxytetracycline were less toxic when the semen was diluted 1 in 3 with Ringer's soln. or 1 in 20 with 30% seminal plasma instead of Ringer. This suggests the presence of a protective substance in the seminal plasma.

I. An investigation into ecchymosis in beef cattle at the Wyndham meatworks is reported. Information is given on the distribution, macro- and microscopic appearance of the ecchymosis lesions. A comparison of the blood picture of normal and affected animals is reported. The coagulation time and platelet count was lower in the affected animals. Results indicated that the condition was unlikely to be due to a disorder of the clotting mechanism or to mishandling of the animals at the meatworks.

II. The incidence and importance of ecchymosis to the Queensland beef industry and the possible preslaughter and slaughter factors associated with the condition are discussed.—I. D. WARDROP.

The toxicity of sulphanilamide and chloramphenicol was not antagonized by  $\beta$ -aminobenzoic acid or phenylalanine respectively. The spermicidal effect of biotin, however, was reduced by chlortetracycline.

Oxygen uptake, fructolysis, and lactic acid production were consistently depressed by sulphanilamide at 5 mg./ml. A similar concentration of chloramphenicol almost completely inhibited oxygen uptake although aerobic fructolysis and lactic acid production were unaffected. Metabolism was little affected by as much as 20 mg./ml. penicillin.

- White, I. G. & Lincoln, G. J. (1960). The yellow pigmentation of bull semen and its content of riboflavin, niacin, thiamine and related compounds. — Biochem. J. 76, 301-306. 4077

Studies on semen from Friesian bulls in Australia confirmed that yellow pigment was riboflavin in an average conc. of 19  $\mu\text{g}/\text{ml}$ . as against 0.5  $\mu\text{g}/\text{ml}$ . in semen of normal colour. Yellow semen did not contain much extra niacin, thiamine or fructose. Fading of yellow semen when exposed to light was accompanied by breakdown of riboflavin to lumichrome. When riboflavin was added to normal semen at 20  $\mu\text{g}/\text{ml}$ . it decreased oxygen uptake and motility of the spermatozoa.—R.M.

- Freund, M. & Murphree, R. L. (1960). Effect of whole-body  $\gamma$ -irradiation on the characteristics and metabolism of bull semen during the early post-irradiation period.—J. Dairy

Sci. 43, 1130-1134. [Authors' summary modified.] 4078

Whole-body  $\gamma$ -radiation of mature Hereford bulls with a single dose of 400 r from radio-cobalt did not result in any apparent change in spermatozoa concentration and initial fructose content or in sperm activity (initial motility and fructolytic activity) during 3 weeks after irradiation. Evidently those cells which were past the spermatogonial stage at the time of irradiation were metabolically unaffected.

Salerno, G. & Mammoli, R. (1959). Su alcuni tentativi di iper-ovulazione artificialmente provocata in vitelle di latte. [Superovulation in immature heifers.]—Ann. Fac. Med. vet. Pisa 12, 240-290. [Summaries in English and French.] 4079

Various hormone treatments were employed in controlled experiments on heifers aged 48-114 days. Ripening of numerous follicles occurred in almost all the animals but only in a few did ovulation (limited to a single follicle) occur. A histological study was made of the genital organs of test animals and controls.—T.E.G.R.

Cupps, P. T., Laben, R. C. & Rahlmann, D. F. (1960). Effects of estradiol benzoate injections on the characteristics of bovine semen. —J. Dairy Sci. 43, 1135-1139. [Authors' summary modified.] 4080

Oestradiol benzoate was injected i/m into two normal bulls in doses ranging from 0·99 to 70 mg. once a week for 3-9 weeks. At doses up to and including 15 mg. a week, the oestrogen produced only slight changes in the semen. Doses of 35 and 70 mg. a week decreased semen quality; 70 mg. per week decreased the libido in one bull but had no effect on another.

Martin, L. (1960). Early vaginal responses in two lines of mice selected, on the basis of vaginal cornification, for high and low sensitivity to the intravaginal application of oestrogens. —J. Endocrin. 20, 293-298. [Author's summary.] 4081

The differing sensitivities of two lines of mice, selected on the basis of vaginal cornification for high and low sensitivity to oestrogens, were not reflected in early responses to oestrogen, nor in differential rates of loss of oestrogen from the vagina.

The relation of vaginal cornification to the initial action of oestrogens is discussed.

Martin, L., Emmens, C. W. & Cox, R. I. (1960). The effects of oestrogens and anti-oestrogens on early pregnancy in mice.—J. Endocrin. 20, 299-306. [Authors' summary modified.] 4082

The capacity of various oestrogens and anti-oestrogens to inhibit early pregnancy in the mouse was compared. Both classes of compound are effective, but there remains some doubt as to the mode of action of anti-oestrogens, since they are also oestrogenic (or pro-oestrogenic) in high doses. However, differences exist between the relative potency of dimethylstilboestrol (DMS, the most potent anti-oestrogen tested) and oestradiol as anti-fertility agents, and their relative potency as oestrogens. Differences also exist between their capacities to interrupt pregnancy in single doses. It is therefore concluded that DMS, at least, probably acts by virtue of its anti-oestrogenic activity.

Savard, K., Thompson, H. G., Gut, M. & Dorfman, R. I. (1960). Metabolism of estrogens in the pregnant mare.—Endocrinology 67, 276-279. [Authors' abst.] 4083

Administration of dihydroequilenin- $17\beta$ -4-C<sup>14</sup> to a pregnant mare resulted in the isolation from the urine of radioactive equilenin (and dihydroequilenin- $17\beta$ ). Estrone and equilin were isolated devoid of radioactivity.

Santamarina, E. & Joven, L. L. (1960). The effect of time and temperature on the gonadotropic potency of pregnant mare serum. —Amer. J. vet. Res. 21, 585-590. [Abst. from authors' summary.] 4084

Room temperature inactivated practically all potency of gonadotrophins in 72 hours, as determined by macroscopic appearance of the reproductive organs, ovarian and uterine size and weight, and histological structure of the ovaries of treated mice.

Trainin, D. & Adler, J. H. (1960). Treatment of bovine cystic ovaries using gonadotrophin and progesterone intravenously. —Refuah vet. 17, 17-18. [In Hebrew. In English, p. 34.] 4085

One valuable nymphomaniac cow which had failed to respond to repeated treatment with luteinizing hormone intravenously, on one occasion supplemented by progesterone intramuscularly, 9-29 weeks following calving, appeared to respond at once when the combined treatments (respectively 3,000 i.u. and 100 mg.) were given as an intravenous emulsion in 10 ml. water and 4 ml. olive oil.

Subsequently 30 cases involving 4 clinical types of cystic ovarian disease were similarly treated and only two required repeat treatment before the cycle was regularized. Conception results may be published later.

—F. L. M. DAWSON.

Bouters, R., Vandeplassche, M., Florent, A., Leunen, J. & Devos, A. (1960). De ulcereuse balanoposthitis bij fokstieren. [Ulcerative balanoposthitis in bulls.] — Vlaams diergeneesk. Tijdschr. 29, 171-186. [In Flemish. Summaries in English, French and German.]

4086

The incidence of impotence among bulls in Belgium increased during 1959. Investigation revealed ulcers on the prepuce in many cases, frequently associated with acute balanoposthitis and a nasal discharge. Balanoposthitis was reproduced by inoculating filtered or unfiltered preputial secretion into bulls and the same material caused pustular vulvovaginitis in heifers. After 2-3 weeks serum from the heifers neutralized a vaginitis virus obtained from the U.S.A. [see *V.B.* 29, 1066]. It was considered that a virus was responsible for the bulk of ulcerative conditions causing impotence. In 2 of 6 experimentally infected bulls there was also acute oedematous inflammation of scrotum and testicles, accompanied by degeneration of the germinal epithelium. In one bull the orchitis occurred 50 days after recovery from balanoposthitis, and in another bull 10 months elapsed between these stages. In early stages of infection ulcers appeared on the mucous membranes of nose and mouth. Pronounced leucopenia developed in infected bulls and heifers. In heifers infected by the vaginal route, the virus was recovered from nasal discharge. A mare developed transient leucopenia 48 hours after vaginal instillation of tissue-culture virus, and this occurred in a stallion infected by way of the prepuce, but no ulcers developed. Tests of 8 antibiotics on organisms present in preputial washings from 9 cases revealed that chloramphenicol was highly active against the secondary bacterial invaders. The lesions in treated bulls healed within a fortnight but they did not copulate normally for several weeks afterwards.—R.M.

Bratanoff, K. & Dikoff, W. (1960). Untersuchungen der Spermoisoagglutination und ihres Einflusses auf die Befruchtung bei Kühen. [Iso-agglutination of spermatozoa and its influence on the fertility of cows.] — Zuchthyg. FortpflStörung. u. Besamung 4,

162-172. [Summaries in English and Russian.]

4087

Washed spermatozoa agglutination tests were carried out with oestral mucus, saliva, milk, and cow blood serum, the latter giving the best reactions. Titres did not exceed 1 : 16 when conception occurred to first service (42 cows) but when cows (a total of 48) returned repeatedly to 8 given bulls, titres of up to 1 : 512 (overall 35% agglutination at this dilution) were often obtained. Other bulls tested against this serum gave low titres and on service with these bulls conception resulted.

—F. L. M. DAWSON.

Hansel, W. (1960). Female infertility in domestic animals. — Canad. J. comp. Med. 24, 209-215. [Author's summary modified.]

4088

Early embryo mortality has been found to be a major cause of infertility in every species studied. Fertilization rates of 90% or more are normal for cattle and pigs mated with potent males, but the rates of early embryo mortality amount to 11% of the fertilized ova in normal heifers, 36 to 43% in infertile cows, and 35 to 45% in pigs.

A high incidence of luteal cysts in cows suggests that inadequate luteal function is one cause of early embryonic mortality. The formation and function of the corpus luteum can be inhibited, and in some cases cystic corpora lutea can be produced by injections of oxytocin during the first week of the oestrous cycle. Factors causing excessive release of oxytocin may decrease fertility in cattle by depressing luteal function. Evidence is accumulating that in both the ewe and the cow, luteal function can be suppressed as a result of stimuli of uterine origin acting on the anterior pituitary lobe by way of the hypothalamus.

In pigs, a high level of feeding from 70 days of age onwards delays the onset of puberty and increases embryo mortality. In heifers, the age at which first oestrus occurs can be varied between the 37th and 72nd week by varying the level of nutrition. However, once oestrous cycles are initiated the regularity of the cycles and the number of services required for conception are not much influenced by feeding.

Mitchell, D. (1960). Bovine abortion — an analysis of 227 cases. — Canad. vet. J. 1, 337-343. [Summary in French. Author's summary modified.]

4089

Twenty cases (8.8%) were attributed to

*Br. abortus*, 51 cases (22.5%) to *L. pomona*, one to *V. fetus*, one to *Str. pyogenes*, one to *C. pyogenes* and one to *Past. haemolytica*. Limited virological and mycological examinations were negative and 152 cases (67%) remained undiagnosed. 104 of these occurred between the 120th and 180th day of gestation. These abortions were asymptomatic, there was no impairment of fertility afterwards, and only six cows are known to have aborted a second time.

Tsumura, I., Sasaki, H. & Maeta, T. (1960). [Studies on sterility of cows. IV. Crystallization pattern and cellular changes of nasal mucus during the sexual cycle.] — J. Jap. vet. med. Ass. 13, 306-309. [In Japanese. English summary modified.] 4090

Studies on crystallization and cytology of nasal mucus smears were performed on 260 cows. The crystallization pattern in nasal mucous smears treated with silver nitrate was the same as that observed in cervix mucus. The crystallization pattern of nasal mucus was classified into ten types. It changed during the reproductive cycle.

The cells in smears were mainly epithelial cells, neutrophiles, lymphocytes, eosinophiles and monocytes. In oestrus these cells were more numerous than at other stages of the sexual cycle.

Hart, D. S. (1960). Fertility responses in ewes treated with thyroxine.—N.Z. J. agric. Res. 3, 565-578. [Author's summary modified.] 4091

The fertility results from 1,233 ewes of various ages implanted with l-thyroxine and 860 untreated controls are presented. The ratio of lambs produced/ewes mated was 9.5% higher in treated ewes. The fertility response appears to be very sensitive to the rate of absorption of thyroxine.

The effects of different doses and the response of two-tooth as compared with mature ewes are discussed in relation to fertility.

Pomeroy, R. W. (1960). Infertility and neonatal mortality in the sow. I. Lifetime performance and reasons for disposal of sows. II. Experimental observations on sterility. III. Neonatal mortality and foetal development. IV. Further observations and conclusions.—J. agric. Sci. 54, 1-17; 18-30; 31-56 & 57-66. 4092

1,000 East Anglian sows were investigated. The average length of breeding life

was only 3.75 litters; failure to breed was the most important reason for disposal (214 sows, of which 30% had a single litter only) and next came the tendency to piglet mortality (178 sows). Sows not farrowing too young (over 12, preferably 14-15 months) had longer breeding lives and produced more pigs per litter.

62 infertile sows were served and slaughtered within 21 days. At P.M. examination 24 had abnormal ovaries, and of these only one had conceived. Several cases of cystic ovaries were studied by successive laparotomies. Stilboestrol treatment gave promising results whereas that with luteinizing hormone was disappointing. Cystic disease could be reproduced experimentally by progesterone given subcutaneously, 100 mg. daily for 13 days.

An analysis of pre-weaning mortality in inbred Large Whites showed a progressive rise after the fifth generation to reach 88% by the tenth. Runt pigs showed clear evidence of intra-uterine starvation.

—F. L. M. DAWSON.

van Schaik, P. (1960). Een veel voorkomend klawgubrek bij ons zwartbonte rundvee. [A common defect of the hoof in Friesian cattle.] — Tijdschr. Diergeneesk. 85, 659-663. [In Dutch. Summary in English.] 4093

The author drew attention to a condition of the hind claws, particularly the outer claw, in which the wall of the hoof grew over the sole at an early age; it was often necessary to cut the claws of heifers and yearling bulls on account of it. The interdigital space appeared to be too narrow and the whole claw was smaller, narrower and more pointed than normal. With increasing age the claws spread outwards and became painful, shortening the useful life of cows and bulls.—R.M.

Dekker, A., Kroneman, J. J., Knoop, A. A. & Brooijmans, A. W. M. (1960). Congenital aortic-caval anastomosis in a new-born calf. — Tijdschr. Diergeneesk. 85, 983-998. [In English. Summaries in French, German and Dutch.] 4094

A week-old calf with dyspnoea was examined clinically over 11 days and then submitted to electrocardiography, ballistocardiography, heart catheterization and puncture and radiography. When it was killed the anterior vena cava was found to be joined to the brachiocephalic trunk. The foramen ovale and ductus arteriosus were also patent.—R.M.

Ashton, G. C. (1960).  *$\beta$ -globulin polymorphism and economic factors in dairy cattle.* — J. agric. Sci. 54, 321-328. [Author's summary modified.] 4095

The serum  $\beta$ -globulin phenotype of 141

See also abst. 3801 (listerial abortion in cattle); 3805 (Fast, pseudotuberculosis from sheep foetus); 3815 (effect of ovarian hormones on uterine defence mechanism); 3816 (S. abortus-ovis infection in Macedonia); 3817 (salmonella abortion in pigs); 3835-3836 (lepto-spiral abortion in cows and sows); 3858 (aspergillus dermatomycosis in aborted bovine foetuses); 3905 (infectious vaginitis in cows); 4002 (effect of Zn deficiency on chick hatchability and embryonic development); 4106 (report, South Holland).

## ZOOTECHNY

Fraser, A. S. & Short, B. F. (1960). *The biology of the fleece.* — Tech. Pap. Anim. Res. Lab. C.S.I.R.O., Aust. No. 3 pp. 108. 4096

This is a broad survey of present knowledge of wool biology with chapters on development of wool follicles, development of follicle population, birthcoat, competition between adjacent follicles, density of follicle population, shedding, fibre length, crimp, skin folds, fleece mosaics, fleece-type mutants, non-nutritional environmental effects on wool growth, efficiency of wool growth, systemic and localized control of wool growth. It is written as "a speculative thesis" rather than "as a manual for extension workers or as a text for students", and indicates current views of some Australian workers. Appendices describe birthcoat studies on N-type and normal New Zealand Romneys, and histological and metrological techniques. 239 refs.

—M. H. HARDY.

Anon. (1960). *Vocabulary of animal husbandry terms.* pp. 674. Rome: Food and Agriculture Organisation of the United Nations and European Association for Animal Production. 55s. [In English, French, German and Spanish.] 4097

This is an ambitious first attempt to collect and collate terms in English, French, German and Spanish which apply to animal production in its widest sense. Horses, cattle, sheep, pigs and goats are included but poultry are inexplicably left out. There are sections devoted to anatomy, physiology, genetics, breeding, feeding, hygiene and therapy, animal products.

There is no special section for diseases of

See also abst. 4118 (book, animal husbandry in the tropics).

## TECHNIQUE AND APPARATUS

Cowan, S. T. & Steel, K. J. (1960). *A device for the identification of microorganisms.* — Lancet, May 28th, 1172-1173. 4099

The main diagnostic characters of a group or even a genus of bacteria are recorded on a

bulls in Cattle Breeding Centres in England and Wales was determined by starch-gel electrophoresis. It is concluded that the  $\beta$ -globulin locus is concerned in the genetic control of milk yield.

animals. These may be found under the heading "hygiene and therapy" or under the name of each animal, and they are a rather jumbled and incomplete assortment of terms. It is not possible to name all the faults here: many entries in English are spoiled by the inclusion of obsolete synonyms, such as pig typhoid for swine fever, red soldier for swine erysipelas, malignant fever for foot and mouth disease. Swine influenza has been confused with porcine virus pneumonia and pasteurellosis. Among the important diseases not mentioned at all are Johne's disease of cattle and the clostridial diseases of sheep (enterotoxaemia, lamb dysentery, braxy). There are many mis-spellings, such as venereal spelt veneral.

Obviously a work of this magnitude requires to be studied, revised and corrected by English, French, German and Spanish specialists on each of the numerous fields that are dealt with, in order that a more reliable second edition may be produced.—R.M.

Harthoorn, A. M., Lock, J. A. & MacKean, J. (1960). *Translocation of wild animals as a means of game control.* — Nature, Lond. 187, 518. 4098

Thirteen kob antelope in a farming area in Kenya were immobilized with suxamethonium and atropine by means of a syringe fired from a gun, and were transported to a game reserve 320 miles away. They were transported at night to prevent overheating, and immediately before the journey were tranquillized with chlorpromazine hydrochloride, while males had the tips of the horns removed.—M.G.G.

special chart. The characters of the organism to be identified are written on a sheet of transparent plastic. The sheet of plastic is then moved across the chart until a matching set of characters is located.—R.M.

Metzgar, D. P., Jr. & Moskowitz, M. (1960). Separation of growth promoting activity from horse serum by dialysis. — Proc. Soc. exp. Biol., N.Y. 104, 363-365. [Authors' summary modified.] 4100

A method for separating a fraction from horse serum which does not react in tests for protein and which may be used as a substitute for whole serum in tissue culture medium is described.

Kamal, T. H. (1960). Complexometric titration

See also absts. 3781 (screen test and selection medium for *Staph. aureus*); 3786 (tests for detection of abnormalities in milk); 3793 (typing of tubercle bacilli); 3795 (new liquid media for culturing *Mycobact. johnei*); 3806 (electron microscopy of pasteurella); 3808 (typing of pseudomonads); 3845 (cultivation of leptospira); 3870 (fluorescent microscopy of oocysts and coccidia); 3973 (angiocardiology in canine dirofilariasis); 4000 (Sulkowitch test and urinary calcium excretion); 4011 (Takata test for metabolic disorders in cows); 4117 (book, standard methods of milk inspection).

## MISCELLANEOUS

Anon. (1960). List of agricultural press and periodicals in O.E.E.C. member countries. pp. 144. Paris: European Productivity Agency, Organization for European Economic Co-operation. [Project 6/15.] 7s. [In English and French.] 4102

This publication claims to list "the great majority of specialized publications on agriculture and allied subjects" in many European countries. If the coverage of publications from Gt. Britain under the heading "Animal

of calcium and magnesium in the presence of phosphate in milk and blood plasma. — J. agric. Food Chem. 8, 156-158. [Author's summary modified.] 4101

A quick and sensitive method suitable for milk and blood plasma is presented. Interference by phosphate ions was prevented by adding disodium edetate to the neutral system and back-titrating the excess with Ca and Mg standard solutions. Milk and blood plasma samples were used directly without removing the phosphate ions or milk proteins.

## REPORTS

Great Britain. (1959). The West of Scotland Agricultural College. Report on the work of the College for the year ended 30th September 1959. pp. 92. Stirling: Jamieson & Munro, Ltd. [Report on Veterinary Investigations pp. 60-69.] 4103

**Calf Diseases** — 119 calves examined showed 52·56% *Escherichia coli* septicaemia and white scours; 6·72% dietetic disorders; 6·72% pasteurella and other pneumonias; 5·88% navel ill; 4·2% encephalitis and meningitis; 4·2% lead poisoning; 4·2% congenital deformities and immature calves; 3·36% parasitic bronchitis; 2·52% mucosal disease; 1·68% multicentric reticulosclerosis; 0·84% hypocalcaemia; 0·84% kerosene poisoning; 0·84% enterotoxaemia (*Cl. welchii* Type D); 0·84% intussusception and coccidiosis; 0·84% necrosis of bowel; 0·84% ostertagiasis; 0·84% suspected hypothyroidism; and undiagnosed 2·52%.

*E. coli* SEPTICAEMIA (COLIBACILLOSIS) is still a serious cause of calf mortality, mostly during the first week of life. Many calves die

Husbandry and Veterinary Sciences" is a representative sample the work is very incomplete. Only two veterinary publications are listed for Gt. Britain and none of the publications of the Commonwealth Agricultural Bureaux dealing with so many branches of agriculture have been included. It is difficult to understand on what basis selection has been made. A comprehensive list of European Agricultural periodicals could have been useful but such an incomplete list is misleading.

despite treatment with streptomycin which also failed to inhibit growth of *E. coli* on culture. Chloramphenicol and chlortetracycline gave the greatest growth inhibition on culture and good results in treatment. The disease occurs where hygiene, housing and feeding are faulty.

Three typical cases of TIBIAL HEMIMELIA were born in a Galloway pedigree herd. Seven SPASTIC CALVES with a common sire were born alive in an Ayrshire herd, after a normal pregnancy. They all showed spasmodic contractions of the hind limbs and neck, were unable to stand but could drink milk if supported. MULTICENTRIC RETICULOSIS occurred in two cases in which there was a common sire and the dams were mother and daughter.

Many farmers are controlling HYPO-MAGNESEAEMIA successfully by feeding two or three ounces of magnesite daily. In some cases the magnesite is mixed with molasses.

**Diseases of Sheep** — Diseases mentioned are liver fluke, black disease, focal symmetrical encephalomalacia, *Vibrio fetus* infection associated with liver fluke infestation, enzootic

pneumonia in ewes, nematodirus infestation, vibrionic abortion, swayback, contagious pustular dermatitis, Johne's disease, listerellosis, superphosphate poisoning, braxy, lamb dysentery, pulpy kidney disease, mycotic dermatitis, cobalt pine, osteoporosis, bent leg, parasitic gastro-enteritis, hypomagnesaemia of ewes, rickettsial conjunctivitis, blackleg, basic slag poisoning, rhododendron poisoning, pregnancy toxæmia, post-parturient gas gangrene.

There is a section of general observations on LIVER FLUKE in sheep. The fields on which the acute disease occurred in sheep had been grazed by dairy cattle during the summer, which was wet and warm, favourable to the multiplication of the carrier snail and to an increase in the concentration of cercariae in the autumn, when the sheep were put on this area. The acute disease does not occur in the dairy cattle and although fluke eggs were found in their faeces the cattle rarely receive anti-fluke treatment. Snail eradication is never attempted by the dairy farmer as he does not incur losses from the disease. The sheep that die are not his.

Losses from BLACK DISEASE of from 5 to 30 ewes on individual farms occurred from September up to February in 30 outbreaks.

ACUTE FLUKE DISEASE and VIBRIOSIS occurred in a flock of crossbred lambs. Nine lambs died and vibrios were recovered from the livers of the five examined. The vibrios were seen in smears, and in the liver tracks made by immature migrating flukes.

ENZOOTIC PNEUMONIA was prevalent from mid-May to the end of June. Mortality was very high and occurred almost exclusively among Blackface ewes grazing lush pasture.

CORNYBACTERIUM INFECTION caused serious losses in a large herd of pigs. PYELONEPHRITIS was diagnosed in several sows showing vaginal discharge. In one, P.M. examination revealed cystitis and urethritis. Spinal abscess of the cord in the lumbar region was a cause of posterior paralysis. All these sows had healed scars of the feet and legs, (the pigs having been penned in a disused quarry). The abscesses had greenish pus containing *C. pyogenes*. *Salmonella choleraesuis* killed ten pigs in one outbreak. The main symptom was gradual emaciation. P.M. lesions were inflammation of the bowel without necrosis, and swelling of the mesenteric lymph nodes. ZINC LACTATE POISONING occurred in 60 pigs aged 2 to 4 months receiving a meal diet supplemented by whey.

A week's supply of whey was stored in a roughly galvanized tank. Examination of the tank showed where the whey had acted on the galvanizing. Most of the deaths occurred when the sixth and seventh days' supply was fed. Liver and kidney values for Zn were 110 and 230 p.p.m. respectively. No further deaths occurred after the tank was removed.

**Diseases of Poultry**—A list of conditions found in 561 P.M. examinations is given.

Oban Sub-Laboratories dealt with diseases of sheep, cattle and poultry. 2,385 specimens were examined.

**Special Investigations**—Parasitic infestations of hill cattle were studied. All the cattle had *Fasciola hepatica* infestation. Two doses of hexachlorethane had no effect on body weight. Parasitic gastro-enteritis is not a serious problem. Only 10% of faeces samples examined showed strongyle eggs and counts were not high. JOHNE'S DISEASE—Only 3·5% of samples were positive. Clinical cases are rare as positive cases are culled.

BONE DISEASE INVESTIGATIONS are still in progress but there are no definite results.

**COBALT PINE**—The use of heavy pellets improved wool production on some farms.

**HELMINTH CONTROL IN HILL SHEEP**—Results showed that one dose of phenothiazine each year is enough to control infection in a hill flock and the younger sheep should be treated before they go to the winter pasture in October and again when they return in April.

**TICK PYAEMIA IN HILL LAMBS**—The effect of using i/m injections of penidural penicillin to prevent infections was not definite but good results were obtained in treating individuals.—J. A. GRIFFITHS.

Western Australia. (1960). Annual report of the Department of Agriculture of Western Australia for the year ended 30th June, 1959. [Hay, G. K. Baron.] pp. 47. Perth: A. B. Davies, Govt. Printer. 4104

Tuberculin tests on 18,469 dairy cattle in 298 herds gave 147 (0·74%) positive reactors in 69 herds. Most of these reactors came from outside the whole-milk areas. Over 22,000 heifers (about 75% of the yearling heifers in the dairying districts) on 1,313 properties were immunized against BRUCELLOSIS with Strain 19 vaccine.

The sheep Foot Rot eradication campaign has progressed, with 28 properties under

quarantine and 75 freed from the infection during the year.

WINTER DYSENTERY of cattle was reported for the first time.

0·028% of 2·4 million sheep inspected were infested with external parasites, almost entirely LICE.

LUPINOSIS continues to be one of the serious sheep problems. It has now been reported following ingestion of the green plant. The disease is prevalent in the area north of Perth to Geraldton and from the coast east to Moora. It was reproduced for the first time in the laboratory in several sheep.

The major problem in the poultry industry was LEUCOSIS, very high incidence being reported in all poultry rearing areas. Trials were undertaken to determine the value of fat feeding for broiler production, with encouraging results.

5,800 specimens were received in the veterinary diagnostic laboratory, representing an increase of 9% over the previous year. About 40% were poultry specimens, 18·5% sheep, 5·5% cattle, and 4·5% pig specimens.

—M. R. GARDINER.

Colony of North Borneo. (1959). Annual Report of the Department of Agriculture for the year 1958. [Berwick, E. J. H.] pp. 46. Jesselton: Government Printing Dept. 4s. 6d. [Items of Veterinary interest pp. 29-34.] 4105

There were no epidemic diseases of livestock. Animals treated at the clinics have increased in numbers. Patients were buffaloes 7,389, cattle 6,779, ponies 1,273 and pigs 673. Treatments were for helminth infestations, surgical and medical cases and also castrations.

In buffaloes PASTEURELLOSIS and Coccidiosis appear to be declining. Earlier diagnosis and treatment is facilitated by regular faecal examinations.

Private and commercial enterprise in cattle farming is being encouraged and existing farms are being developed and extended to increase the output of the land. A number of Bali cattle were imported from Malaya.

Pigs—Helminths affecting the kidney, the lungs or the intestines are commonly the cause of poverty of condition. No other disease of pigs is mentioned.

Goats are comparatively free from contagious disease except in Tawau, where there is CONTAGIOUS ECTHYMA, unknown elsewhere in the Colony.

Day-old chicks are imported from Japan, from New Hampshire and White Leghorn

stock originating from the U.S.A. Vaccination against NEWCASTLE DISEASE and FOWL POX are an important part of the work of the Animal Husbandry Branch. Local fowls are resistant to fowl pox. Inoculations were: NEWCASTLE DISEASE and FOWL POX 53,857. FOWL CHOLERA occurs sporadically. Sulphadimidine, used to treat coccidiosis, infectious coryza and many non-specific conditions, is being used in increasing quantities and also implants for caponization.

Routine blood tests are made on ponies to detect *Trypanosoma evansi*. No case of surra was reported. Blood smears were examined from 3,273 ponies and 407 prophylactic doses of Antrypol were given. Blood smears of 559 buffaloes and 34 cattle were all negative for trypanosomes. There have been no deaths from surra since 1953. Racing continues to become more popular, with consequent improvement in the attention given to ponies.

A very severe outbreak of DISTEMPER occurred in dogs in Sandakan. Infection by *Dirofilaria immitis* and *Spirocerca sanguolenta* are serious and common diseases of dogs.

There was very little virus infection in cats. It is stated that many cats died as a result of the malarial eradication campaign in the Colony. Where residual spraying is being carried out cats may obtain a lethal dose, which can result in the cat numbers being so reduced as to allow vermin to become a serious problem.—J. A. GRIFFITHS.

Anon. (1960). Netherlands. Dertiende jaarsverslag de provinciale Gezondheidsdienst voor dieren in Zuid-Holland (1 mei 1958 tot en met 30 april 1959). [Annual report of the Livestock Health Service, South Holland.] pp. 49. Gouda: The Livestock Health Service.

4106

There are 12,131 herds in South Holland. 61·8% of them gave three or more consecutive negative ring tests for BOVINE BRUCELLOSIS compared with 48·5% the previous year. Positive reactions to the ring test were encountered in 27% of herds, compared with 34% the previous year. 4,629 herds were declared free from brucellosis on the basis of blood tests. Sources of re-infection were discussed. 35 farmers' meetings were held during the year to publicize the brucellosis eradication scheme which commenced in 1958. There was a further reduction in the number

of heifer calves inoculated with Strain 19 : 27,000 compared with 32,600 in 1958.

TUBERCULIN TESTS were performed on 263,219 cattle and 289 reactors (in 127 herds) were slaughtered. WARBLE FLY inspection revealed that two-thirds of herds were now free from warbles, compared with one-third in the years 1950-1955. All cattle, except about 4,000 in 239 herds, were inoculated with FOOT AND MOUTH DISEASE vaccine. Three

years' trials with DNC (dinitro cresol) for the control of LIVER FLUKE snails showed that it did not succeed in eradicating infestation. Investigations into BOVINE INFERTILITY on 87 herds included determination of Cu, Ca, P and Mg in blood : the Ca contents were all within the normal range of 9-11 mg. % while the P contents were normal (4-5 mg. %) in 25 herds, subnormal in 11 and higher than normal in 60 herds.—R.M.

#### BOOK REVIEWS

Skerman, V. B. D. (1959). A guide to the identification of the genera of bacteria, with methods and digests of generic characteristics. Based on data given in the seventh edition of Bergey's Manual of Determinative Bacteriology and on original papers. pp. ix + 217. Baltimore: The Williams & Wilkins Co. (London: Baillière Tindall & Cox, Ltd.) \$5.50.

4107

This book is essentially a supplement to Bergey's "Manual of determinative Bacteriology", and consists of four parts, viz. A key which is, in most aspects the same as in the "Manual". The Digest of Genera consists of differentiating characters as well as notes. The author's aim here has been to lay as much emphasis on the deficiencies as on the known characters. The section on methods should prove useful to all engaged in the identification of bacteria. The list of methods is not claimed to be exhaustive, (e.g. for the catalase test, only one method involving pouring hydrogen peroxide over the surface of an agar slant culture is described) and those given are not necessarily to be taken as standard but their use should lead to more uniformity in the description of genera. The last section consists of a Guide to Study which is included as an aid to taxonomic work.

This is obviously a very useful reference book.—W. J. BRINLEY MORGAN.

Gunsalus, I. C. & Stanier, R. Y. [Edited by.] (1960). The bacteria: a treatise on structure and function. Volume I: Structure. pp. xiv + 513. New York (& London): Academic Press. \$13.00.

4108

The first volume deals with the structure of bacteria and four more volumes are to follow dealing with metabolism, biosynthesis, growth and general physiology and heredity. When complete, the treatise will be of infinite value to all microbiologists.

The volume under review consists of ten

chapters each by an author of international reputation. The subject matters covered are :—the composition and organization of the bacterial protoplasm by S. E. Luria, The internal structure of the cell by R. G. E. Murray, Surface layers by M. R. J. Salton, Movement by C. Weibull, Spores by C. F. Robinow, Bacterial protoplasts by K. McQuillen, L forms by E. Klieneberger-Nobel, Bacterial viruses by T. F. Anderson, Antigenic analysis by E. S. Lennox, and Localization of enzymes by A. G. Marr.

There is some degree of overlapping but this is rather an advantage in a work of this size and gives it continuity and for this the Editors must be congratulated. The text of each chapter is well arranged with an intelligent use of subheadings which not only makes for easy reading but is also valuable for reference work. The illustrations are excellent and well chosen. There seems to be only one minor error—on page 254 the M protein should refer to group A streptococci.

Each chapter has a list of references and at the end there is a complete author index for the whole volume together with a subject index. These make it invaluable as an excellent reference book especially for post-graduate students.—W. J. BRINLEY MORGAN.

Seelemann, M. (1960). Die Brucellose der Haustiere unter besonderer Berücksichtigung der Immunisierung, der Antikörper- und Schutzstoffbildung. [Brucellosis of domestic animals with special reference to immunization and antibody formation.] pp. viii + 248. Stuttgart: Ferdinand Enke. DM 32. 4109

Professor Seelemann is Director of the Institute for Milk Hygiene at Kiel. During the past 15 years he and his colleagues have published some 30 papers on bovine brucellosis. This book sums up the world literature and the author's own experience of immunization against brucellosis. Various questions

concerning the use of Strain 19 vaccine in cattle, sheep and goats are discussed, such as when and when not to vaccinate and adult vaccination. There is a chapter on the use of flocculation and complement-fixation tests to detect persistent agglutinins from vaccination, and another on the occurrence of latent excretors of brucella. Experiments with killed vaccines are reviewed. Antibodies and antibody formation are dealt with in 77 pages. The book closes with nine pages of summary in German and in English (pp. 227-235), and 13 pages of references.—R.M.

Grin, E. & Ozegović, L. (1960). Dermatofitije ljudi i životinja. Trihofitija—favus—mikrosporija. [Dermatophyte infections in man and animals. Trichophyton—favus—Microsporum.] pp. 158. Belgrade (& Zagreb): Medicinska Knjiga. [In Croat.] 4110

This work, written by a medical and a veterinary dermatologist, contains chapters on the general morphology of dermatophytes, pathogenesis, diagnosis and symptomatology of infection with *Trichophyton* spp., *Microsporum* spp. and *Epidermophyton* in man and animals, aspects of immunity and allergy, therapy, epidemiology in man and animals, geographical distribution of infection, morphology and physiology of pathogenic fungi, classification and mycological techniques. There are numerous tables and diagrams, over 200 illustrations, mostly from photographs or photomicrographs, and a bibliography of over 370 references. There is no index.—E.G.

Adams, M. H. (1959). **Bacteriophages.** pp. xviii + 592. New York (& London): Interscience Publishers. \$15.00. 4111

This book is the first to give a comprehensive account of every aspect of the biology of bacteriophages which has so far been studied as well as a rather briefer account of the use of these organisms in typing their bacterial hosts.

It is based on a manuscript by Mark Adams, brought up to date by an editorial panel after his death. A few chapters, contributed by other authors, were added to complete Adams's original plan.

The author has presented each aspect of the biology of phages in relation to the experimental methods used in its study and also described the results which have followed from each kind of experimental approach. Thus, there are chapters on the enumeration, size and morphology of phage particles; on

the effects of physical and chemical agents on them; on their chemical composition, antigenic properties, nutritional requirements and host specificity; and on the phage's life cycle. Other chapters describe cytological observations on the infected host cell, experiments using radio-isotopes to study the fate of infecting phage particles, the use of chemical inhibitors of phage growth (a chapter contributed by J. S. Gots), and mixed infection experiments in which different phages simultaneously infect the same host. This treatment inevitably leads to some repetition and overlapping between chapters and, where this occurs, there are careful cross-references. However, it succeeds admirably in fulfilling the author's evident aim of assessing each experimental result critically in the light of the methods used and of defining what each method is capable of achieving.

Further chapters are concerned with mutation and phenotypic variation and phage genetics. Two chapters contributed by F. Jacob and E.-L. Wollman deal with lysogeny and bacteriocins. These last, although they are not phages, have enough properties in common with phages to justify their inclusion in this book. E. S. Anderson's chapter on the use of phages in epidemiological studies gives a brief survey of the phage-typing systems in current use and discusses the principles involved in each of them. A final chapter discusses the problems of phage taxonomy.

Throughout the book each technical term is defined when it is first used and, in addition, there is a glossary, of particular help to those unfamiliar with phage jargon.

There is an appendix on experimental methods for studying phages but this does not deal with methods of phage typing.

This book may confidently be recommended both to the student and to the specialist since, although no previous knowledge of the subject is assumed, the wealth of information presented is nowhere else available in one volume. It is to be hoped that further editions will follow so that those interested may be kept up to date in a rapidly developing subject.

—I. DAVIDSON.

Borchert, A. (1959). Parasitäre Krankheiten unserer Haustiere—Verhütung und Bekämpfung. [Parasitic diseases in domestic animals.] pp. viii + 107. Leipzig: S. Hirzel. DM 7.50. 4112

The purpose of this well produced little book is to acquaint agricultural personnel with

the more common parasites of farm livestock and to advise on control not only by anthelmintics and parasiticides, but also by measures based on the life cycles of the parasites. With the aid of statistical material the author endeavours to show the considerable annual losses from parasitic infestation in East Germany. The booklet consists of a main section dealing with the nature, harmful effects and control of parasites and a smaller section on the major parasitic diseases, such as liver fluke, warbles, cysticercosis, echinococcosis, gastro-intestinal parasites and lungworms in ruminants, the main helminth and arthropod parasites in pigs, and coccidiosis in poultry.

—E.G.

Jones, B. V. [Edited by.] (1960). British Small Animal Veterinary Association Congress Proceedings, 1959. Second Annual Congress. pp. 163. Oxford (London, New York & Paris): Pergamon Press. 55s. 4113

Most of the 24 papers presented at this Congress formed three symposia on intervertebral disk luxation, unusual patients (tortoises, chinchillas, monkeys) and major infectious diseases of dogs (distemper, toxoplasmosis). Other papers were by Miss P. Scott on nutrition of cats with reference to imperfect osteogenesis; A. C. Palmer on clinical examination of the nervous system of dogs; A. P. Phillips on the use and misuse of sex hormones; P. J. Dalton on radiotherapy; R. H. Clover on radio-active deposit.—R.M.

Schulze, W. (1960). Leitfaden der Ziegenkrankheiten: für Tierärzte und Studierende der Tierheilkunde. [Diseases of goats.] pp. x + 124. Leipzig: S. Hirzel. 2nd edit. DM 9.90. 4114

The second edition of this handy introduction to goat diseases for veterinarians and veterinary students, contains among others chapters on diseases of the various body systems, poisoning, endoparasites (paralysis due to *Setaria* is not mentioned), metabolic disorders, vices, virus and bacterial diseases, surgery, obstetrics, sterility, diseases of young stock, determination of age, artificial insemination. There are over 50 illustrations, many of which are competent pen drawings. References at the end of chapters total about 450. There is a subject index. The booklet is well produced, paper, print and glazed paper cover being of good quality.—E.G.

Yapp, W. B. (1960). An introduction to animal physiology. pp. xix + 423. Oxford: Clarendon Press. 2nd edit. 25s. 4115

An elementary textbook for sixth-form pupils and zoology students, revised from the 1939 edition.—R.M.

Wolstenholme, G. E. W. & O'Connor, M. [Edited by.] (1959). CIBA Foundation colloquia on ageing. Vol. 5. The lifespan of animals. pp. xii + 324. London: J. & A. Churchill Ltd. 48s. 4116

In this book is recorded the text of fifteen main contributions to a colloquium on the ageing process and life-span in animals, along with, in detail, the discussion on these, and bibliographies. The influence of factors such as breed, strain, hybrid vigour, sex, age of parents, brain weight and body weight, quality and quantity of food, temperature, metabolic rate (including influence of hibernation), egg laying in flies and fishes, and finally disease, all receive attention. The animals given more particular attention include bees, houseflies, *Drosophila subobscura*, various species of fishes, cattle and horses. Thus a subject on which it is difficult and tedious to obtain accurate knowledge, is given up-to-date attention on a wide front.

One chapter deals with the longevity of Thoroughbreds based on information extracted from the stud book and another with that of cattle and again horses. It is regrettable that, in this latter chapter, more care was not given to the designation of the various causes of death or reasons for culling; for instance the wording "... infirmity of the heart, chest and lungs . . .", as a cause of loss in stallions, is scarcely to be passed over without adverse comment. This same author stresses the important point that very many cows never reach their period of maximum productivity.

—A. BROWNLEE.

Schönherr, W. (1960). Standardmethoden der tierärztlichen Milchuntersuchung. [Standard methods in veterinary milk examination.] pp. viii + 56. Jena: Gustav Fischer. DM 18.15. 4117

This monograph on microbiological, chemical and physical methods of milk inspection should be of considerable value to those concerned with milk hygiene. It is well presented.—E.G.

Williamson, G. & Payne, W. J. A. (1959). An introduction to animal husbandry in the

tropics. pp. xix + 435. London: Longmans, Green & Co. Ltd. 48s. 4118

This book is intended for undergraduates in tropical agricultural schools, livestock owners and junior technical officers on first appointment to tropical countries. It is written by a veterinarian, G. Williamson, and an agriculturalist and animal husbandryman, W. J. A. Payne, both with wide experience of the tropics; there are also contributions by other experts. The work is in three parts, the first deals with basic principles (effect of climate, maintenance of health, nutrition and breeding); the second with animal husbandry, with the emphasis on cattle (dairy, beef and work types), and the third with milk and milk products and the preparation of meat and carcass by-products. The book is well presented, concise and makes interesting reading. References are given at the end of chapters and there are many good illustrations, including 8 plates in colour and 41 in black and white. Paper and binding are of good quality. There are some spelling mistakes and, in table I, "all domestic animals" are listed as "animals affected" in the case of foot and mouth disease and "mostly cattle, buffaloes, sheep, goats and horses less commonly" in the case of anthrax.

—T.E.G.R.

Mason, I. L. & Maule, J. P. (1960). *The indigenous livestock of Eastern and Southern*

*Africa*. pp. xv + 151. Farnham Royal: Commonwealth Agricultural Bureaux. [Technical Communication No. 14 of the Commonwealth Bureau of Animal Breeding & Genetics.] 45s. 4119

Breeds of horse, camel, cattle, sheep, goat and pig are described. Three maps show their distribution in Eastern and Southern Africa. There are 179 excellent photographs.—R.M.

—. (1960). *Papers dedicated to Dr. Nicolai Plum*, Director of the Danish State Veterinary Serum Laboratory on the occasion of his seventieth birthday, the 8th September 1960. pp. 293. Copenhagen: C. F. Mortensen Ltd. 4120

Dr. Plum qualified as a veterinary surgeon in 1913 and joined the Danish State Veterinary Serum Laboratory in 1922, becoming Director in 1952. He is best known for his research on tuberculosis, particularly tuberculous abortion in cows and avian-type infection in cattle. This publication, most of which is in English, contains a list of his papers, but the bulk of it comprises 15 papers on a variety of subjects by workers at the Serum Laboratory, such as Rømer's studies on pneumococcal infection in calves, Blom and Christensen on spermiosis in bulls, and Simesen on intramammary antibiotics. These papers have been published in *Nordisk Veterinärmedicin*.—R.M.

#### BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

Bierer, B. W. (1955). *A short history of veterinary medicine in America*. pp. xi + 113. Michigan: State University Press. \$3.00.

Blood, D. C. & Henderson, J. A. (1960). *Veterinary medicine*. pp. xiv + 1008. London: Baillière, Tindall & Cox. 84s.

Hagemann, E. & Schmidt, G. (1960). Ratte und Maus: Versuchstiere in der Forschung. [Rats and mice: laboratory animals in research.] pp. x + 318. Berlin: Walter Gruyter & Co. DM 48.

Hammond, J. (1960). *Farm animals: their*

*breeding, growth and inheritance*. pp. viii + 322. London: Edward Arnold. 3rd Edit. 28s.

Henderson, I. F. & Henderson, W. D. (Edited by Kenneth, J. H.) (1960). *A dictionary of scientific terms: pronunciation, derivation, and definition of terms in biology, botany, zoology, anatomy, cytology, genetics, embryology, physiology*. pp. xv + 595. Edinburgh (& London): Oliver & Boyd. 7th Edit. 32s.

Leonard, E. P. (1960). *Orthopedic surgery of the dog and cat*. pp. xii + 296. Philadelphia (& London): W. B. Saunders Co. 87s. 6d.

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